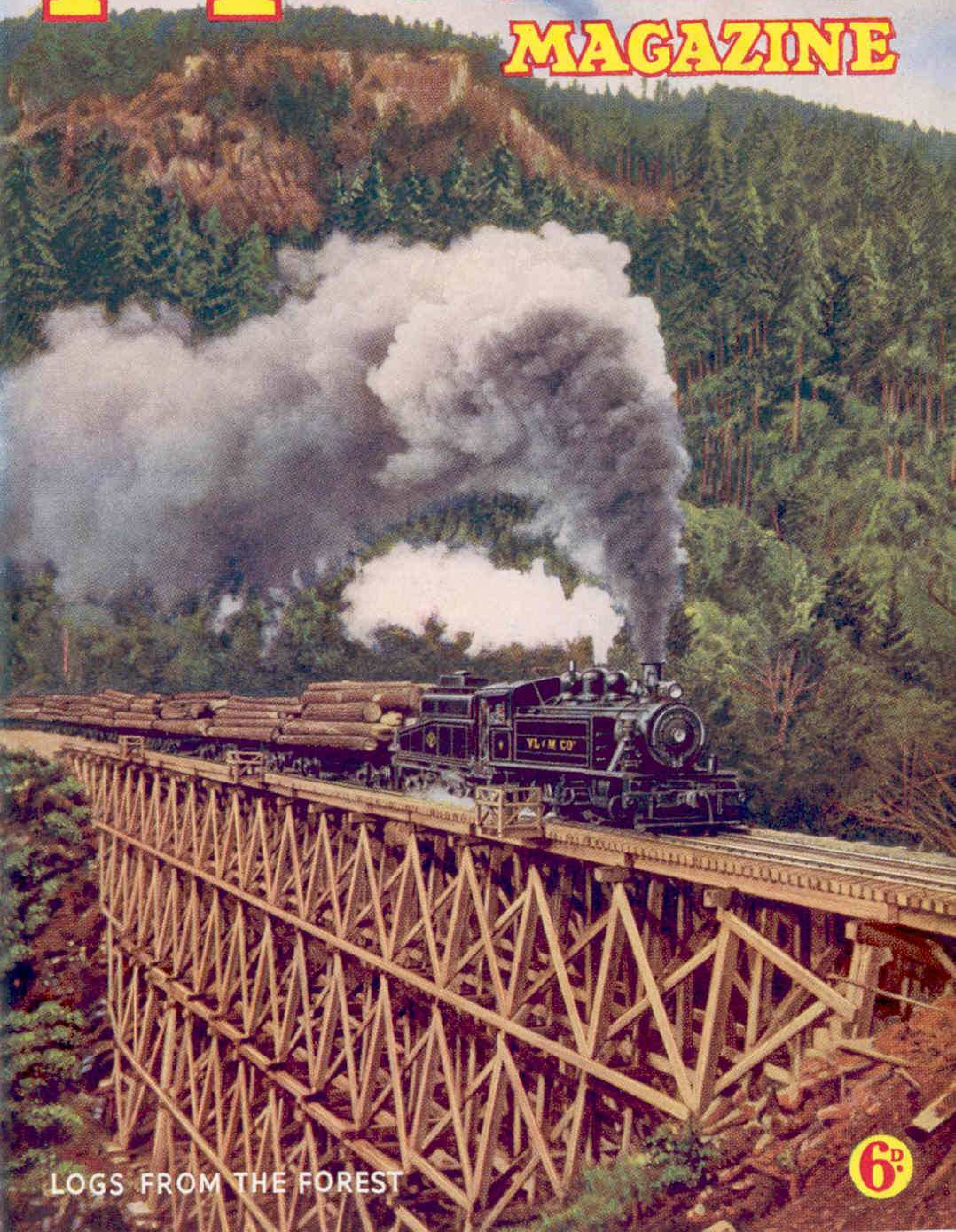


VOL XXXIII. No.8

AUGUST 1948

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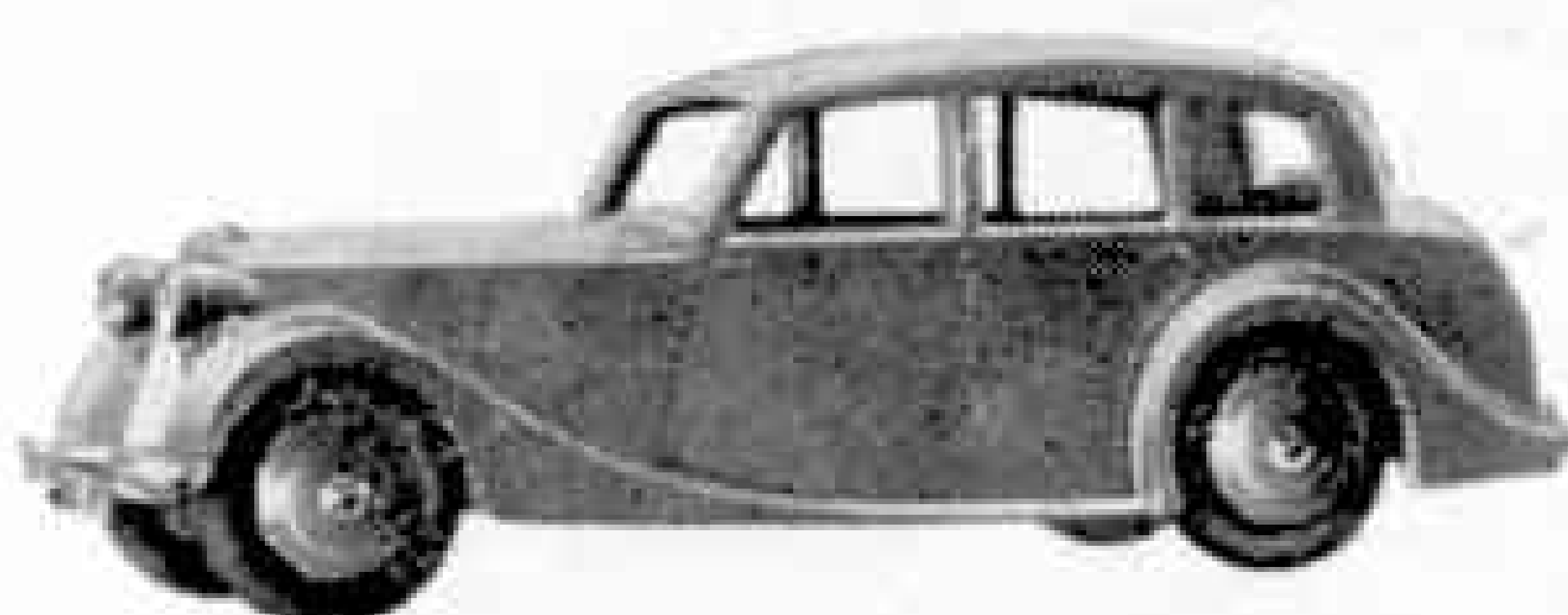
LOGS FROM THE FOREST

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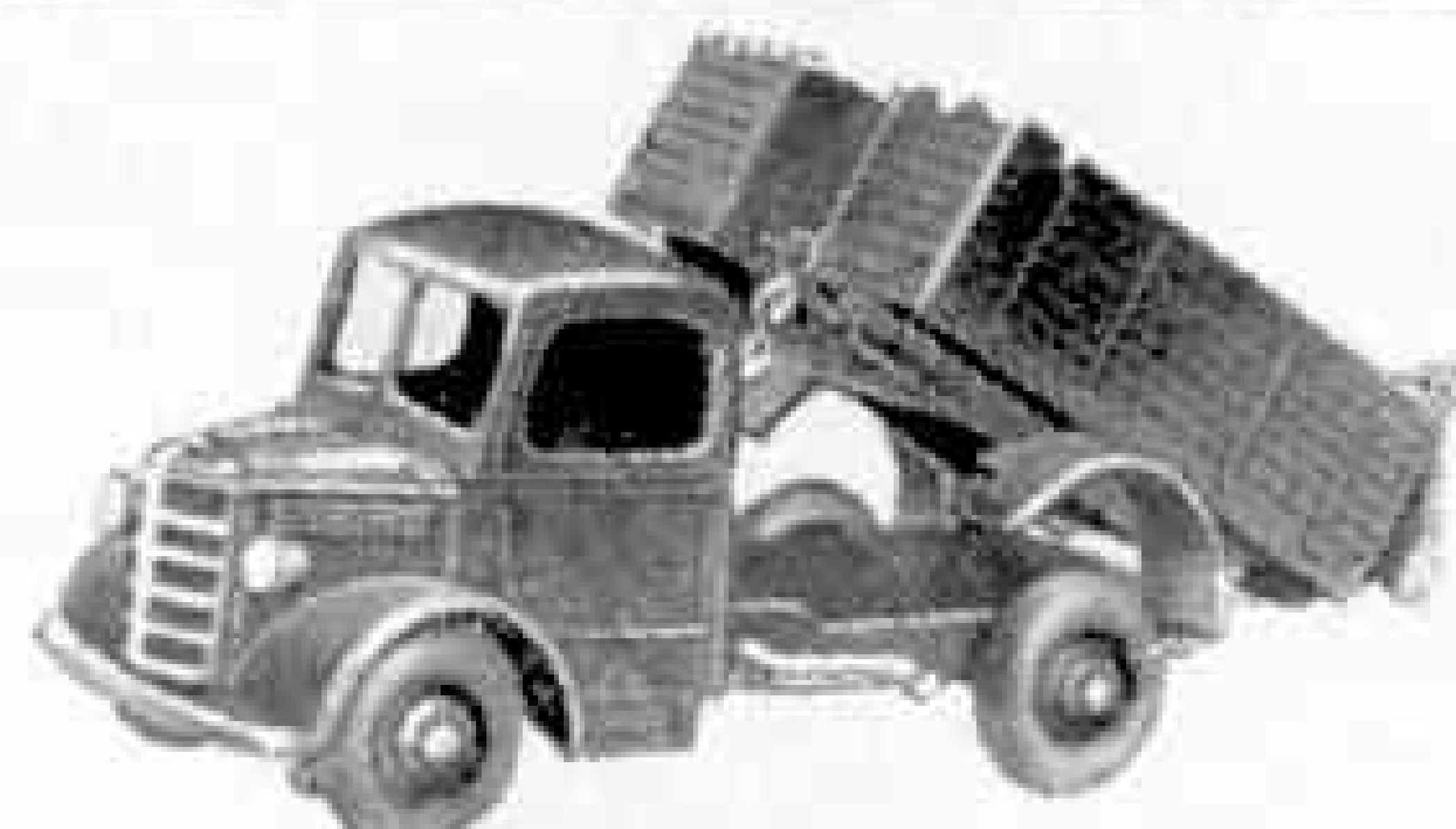
DINKY TOYS



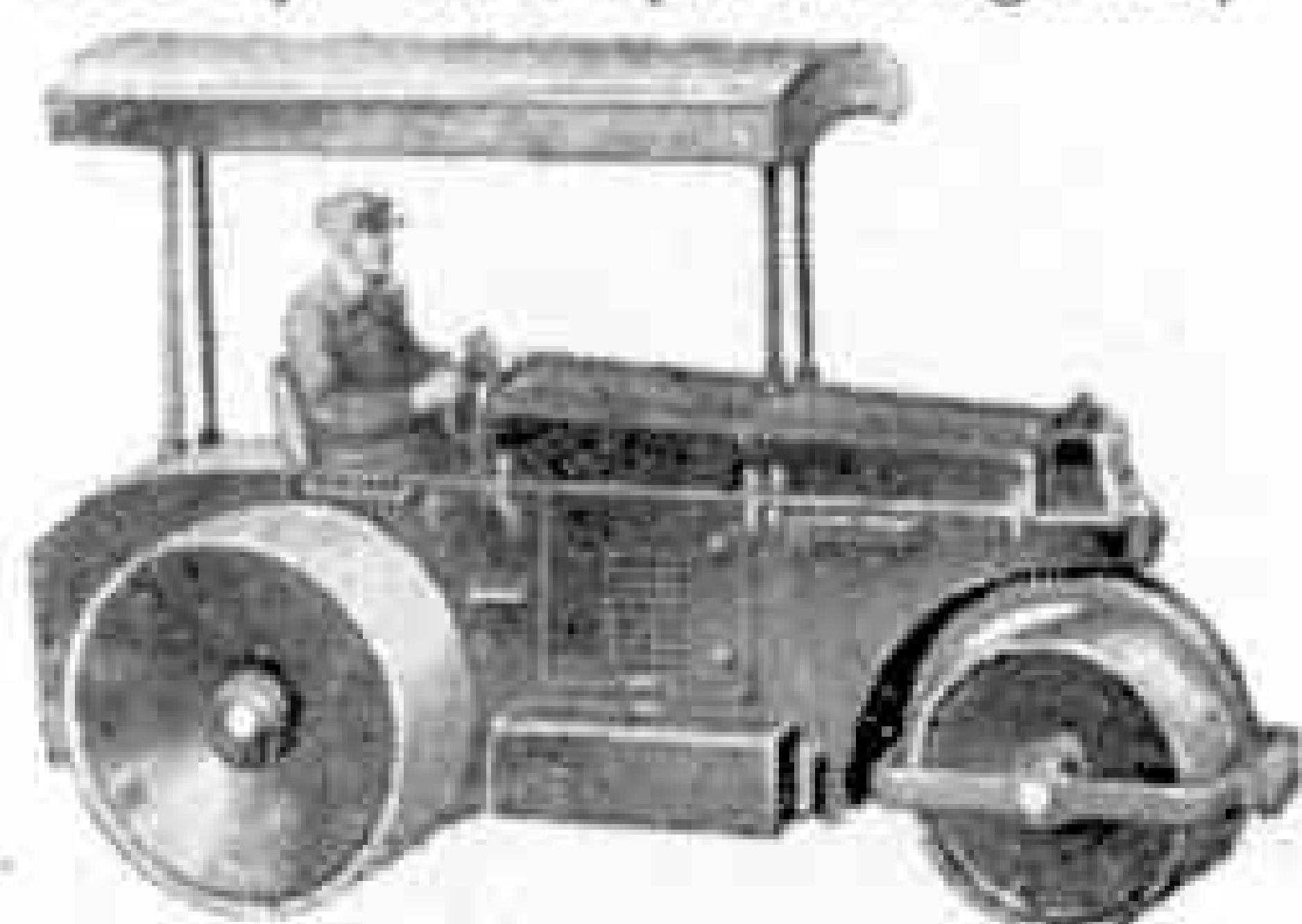
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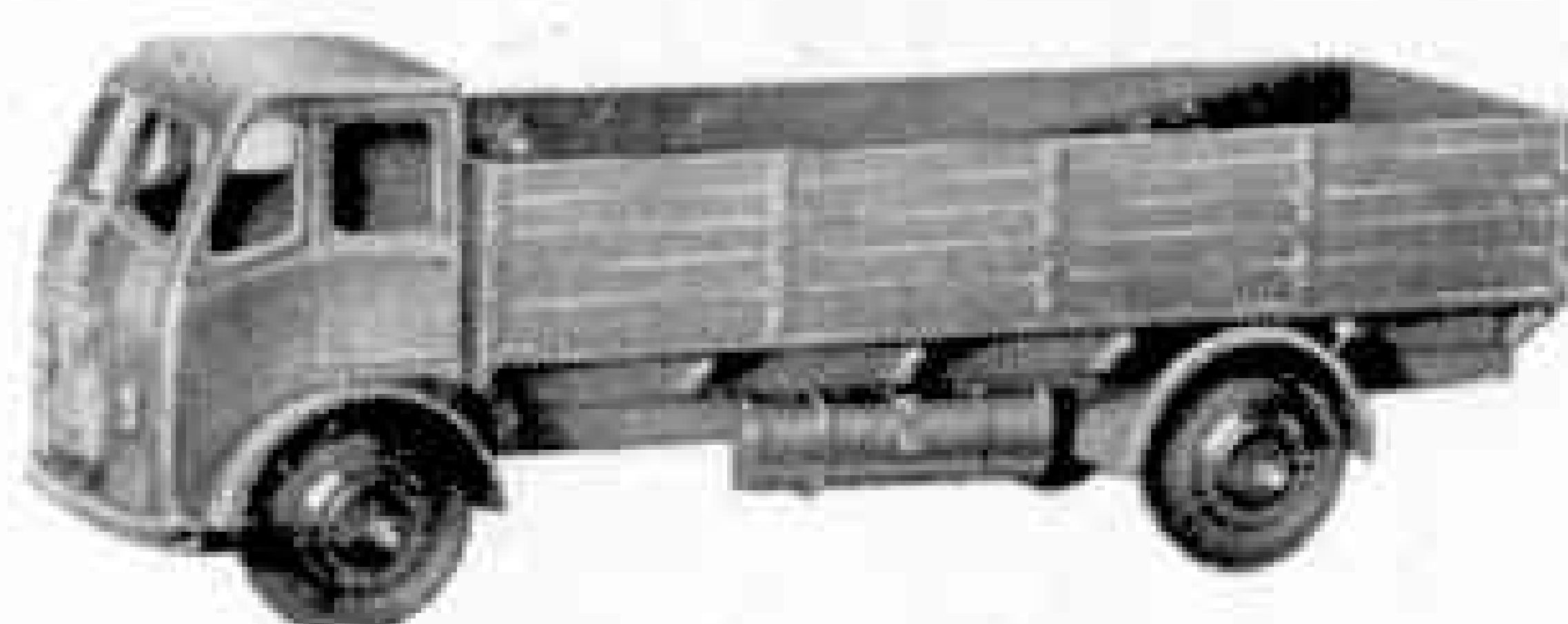
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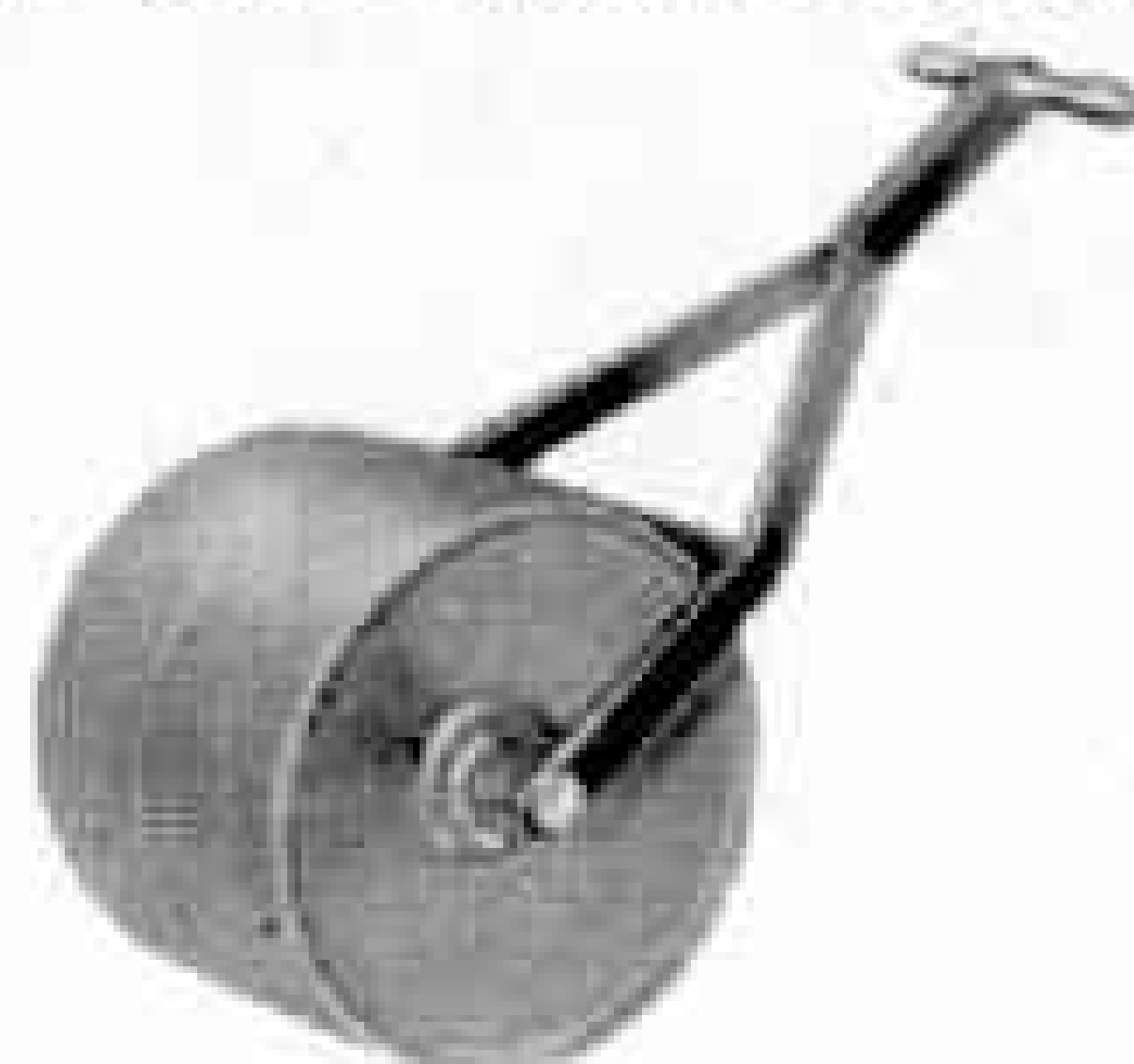
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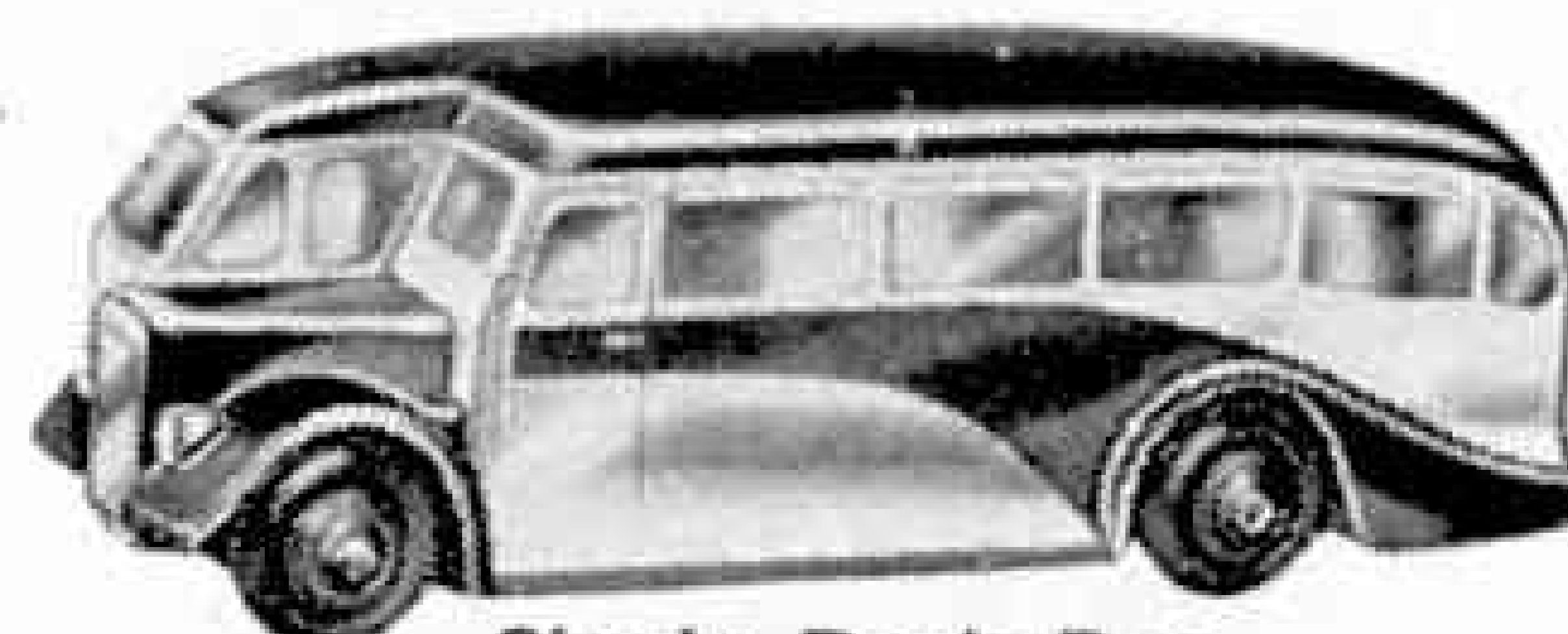
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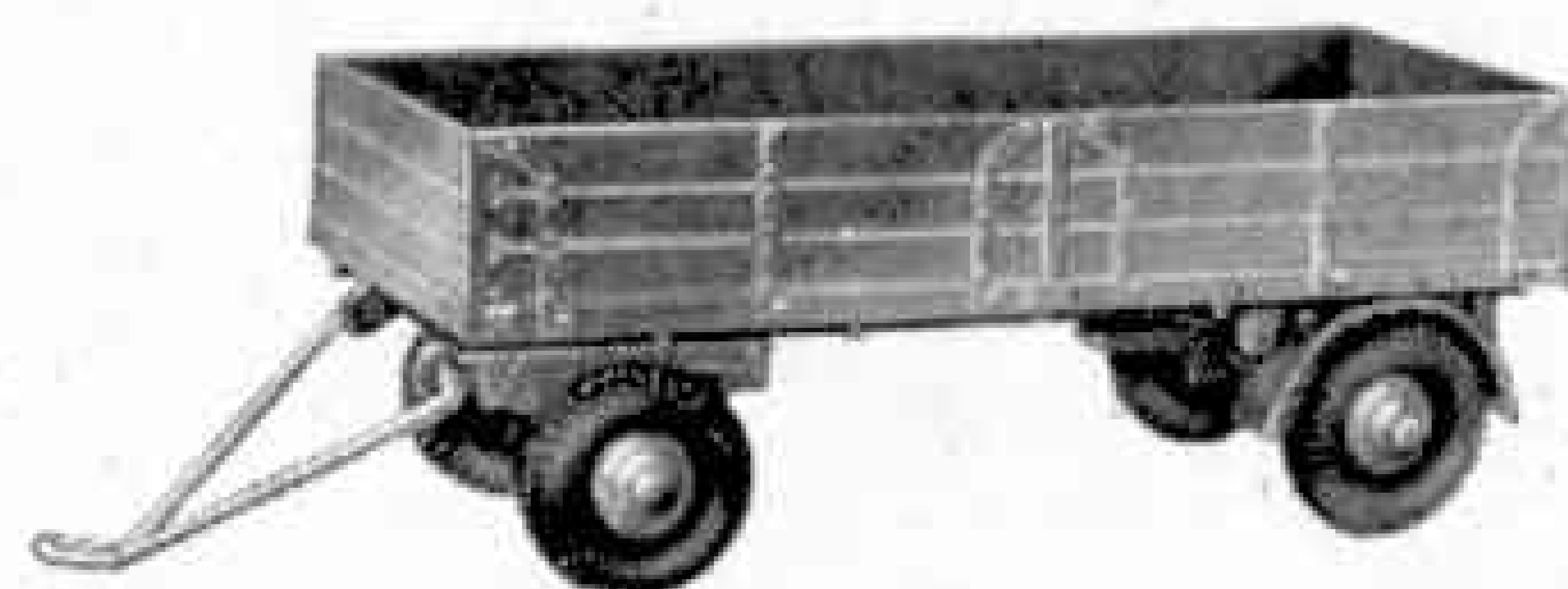
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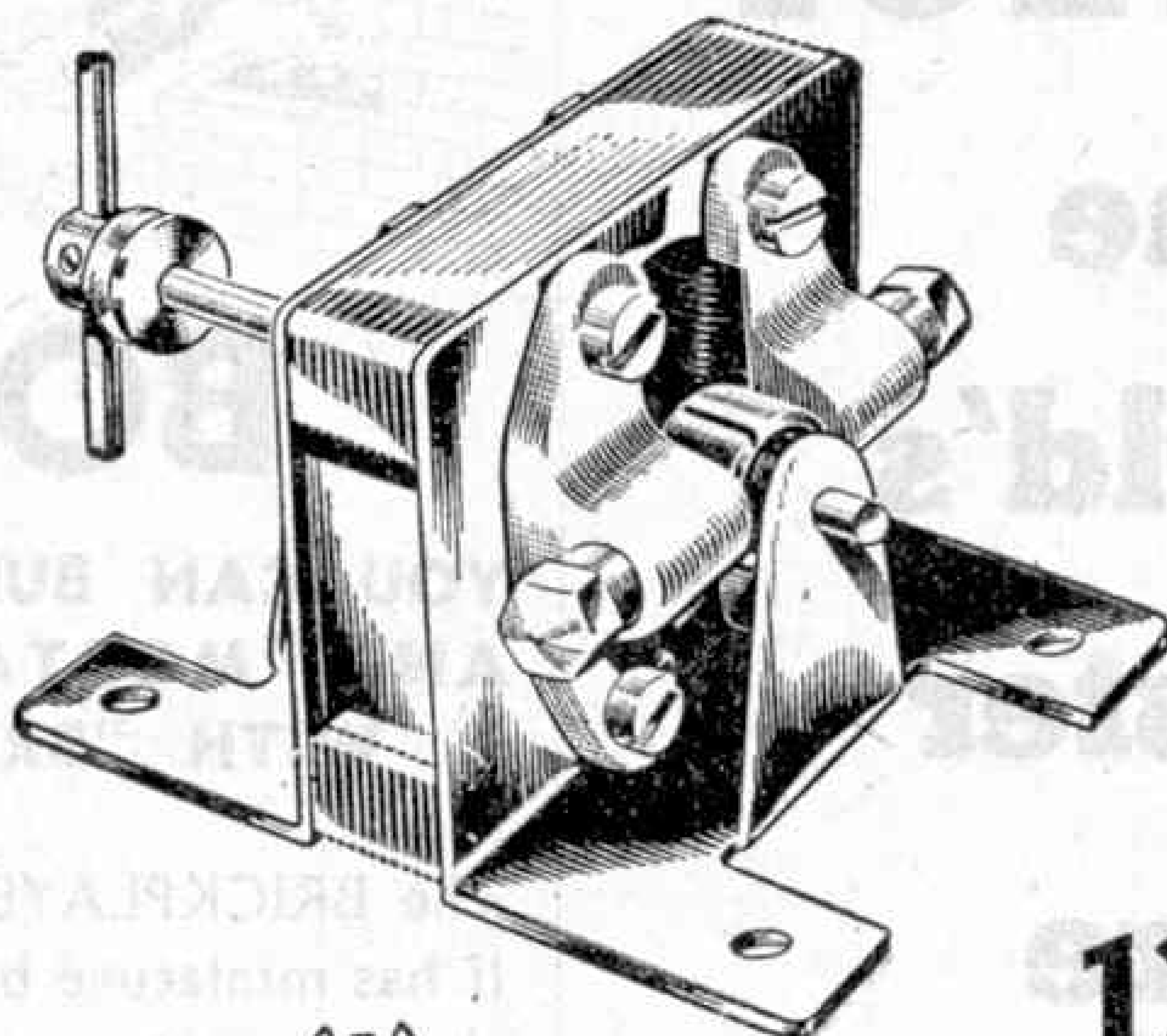


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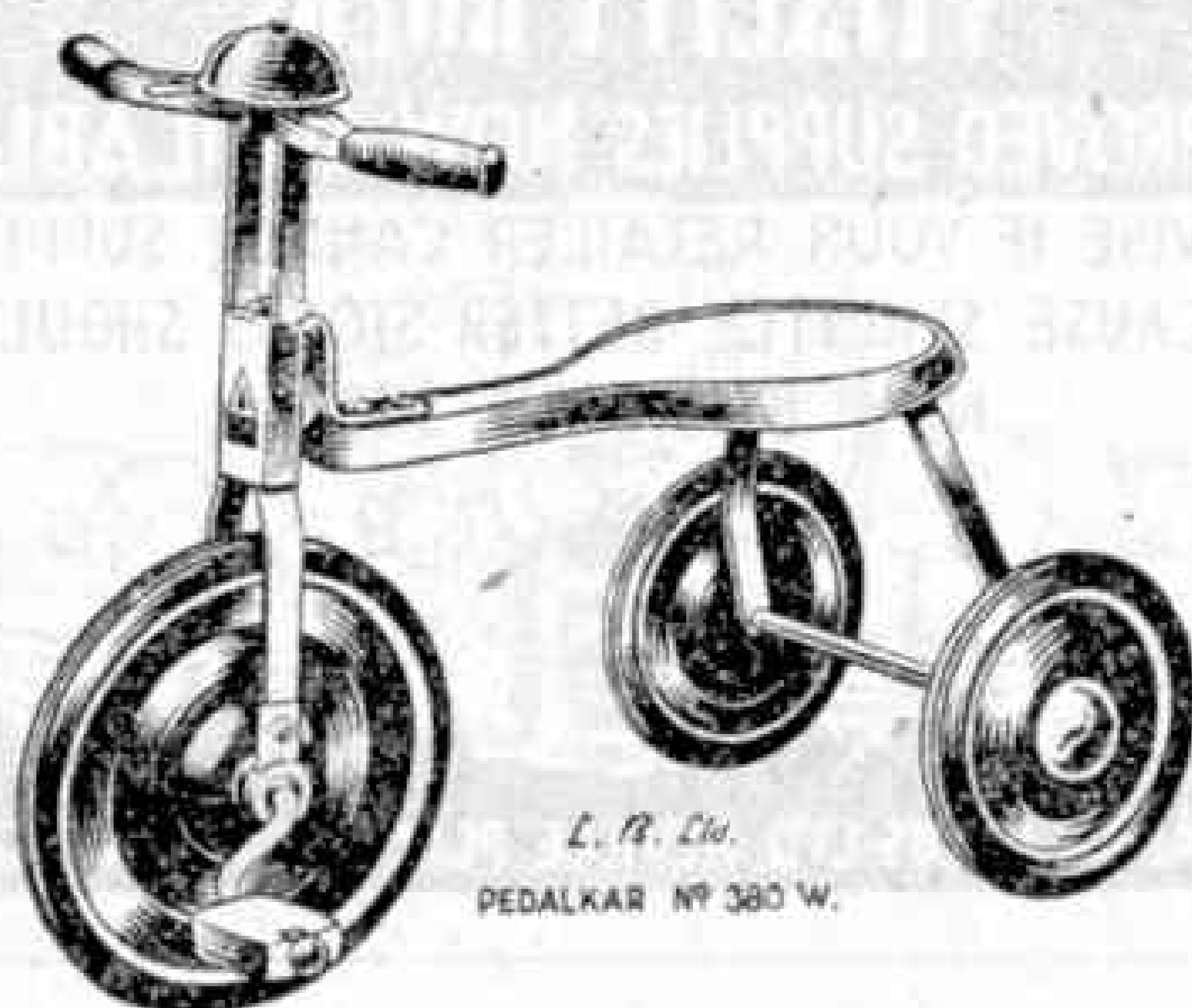
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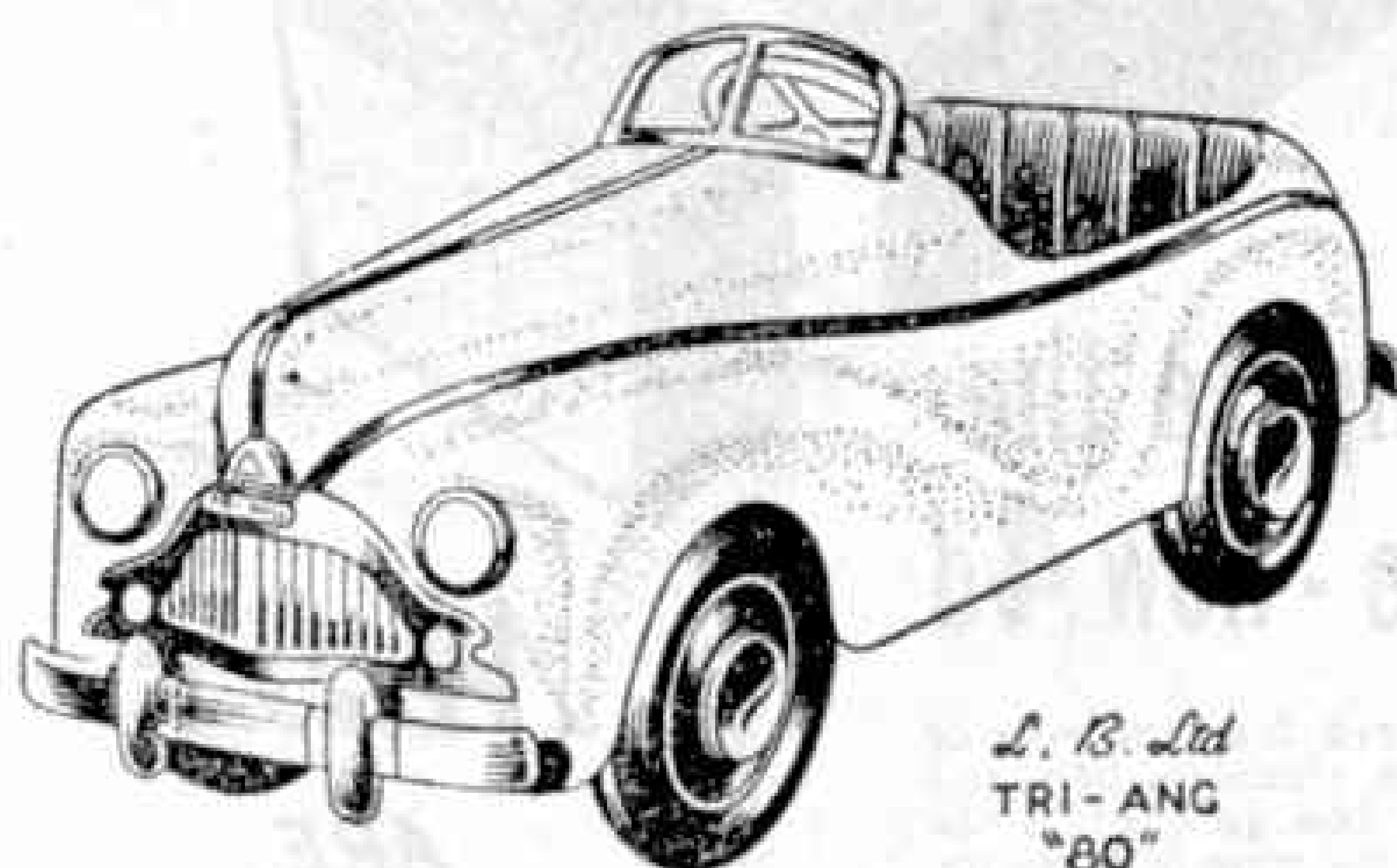
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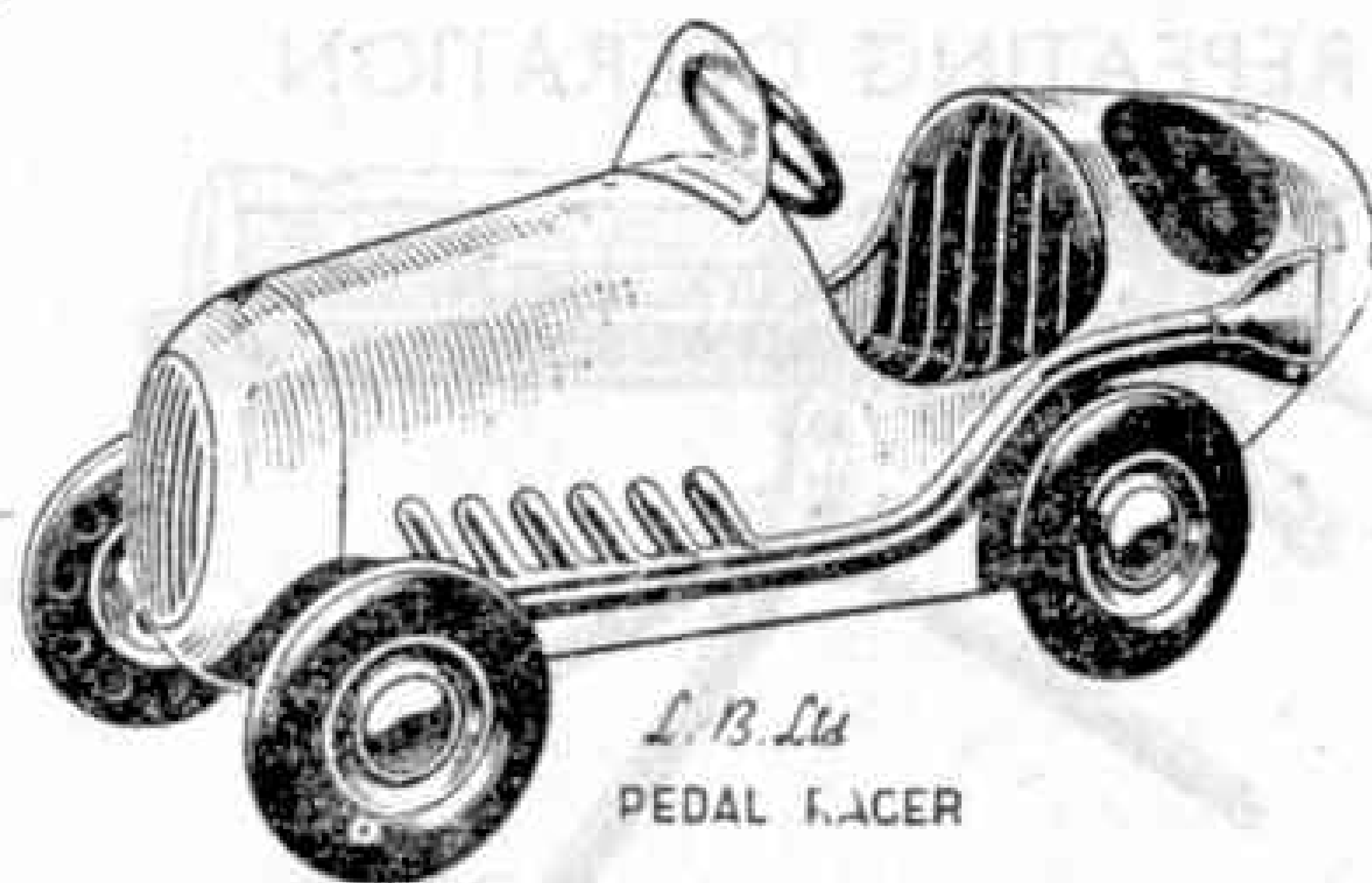
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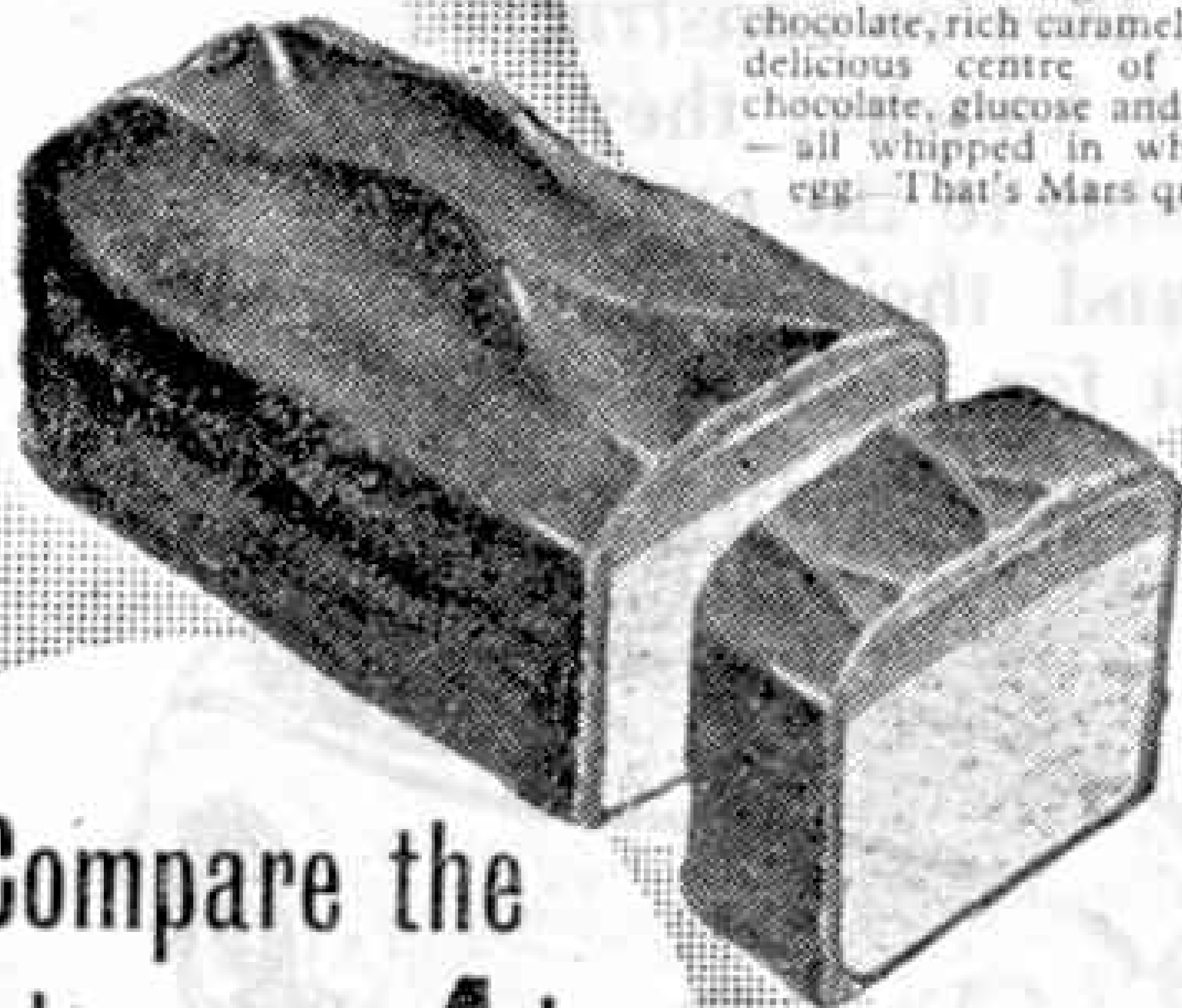
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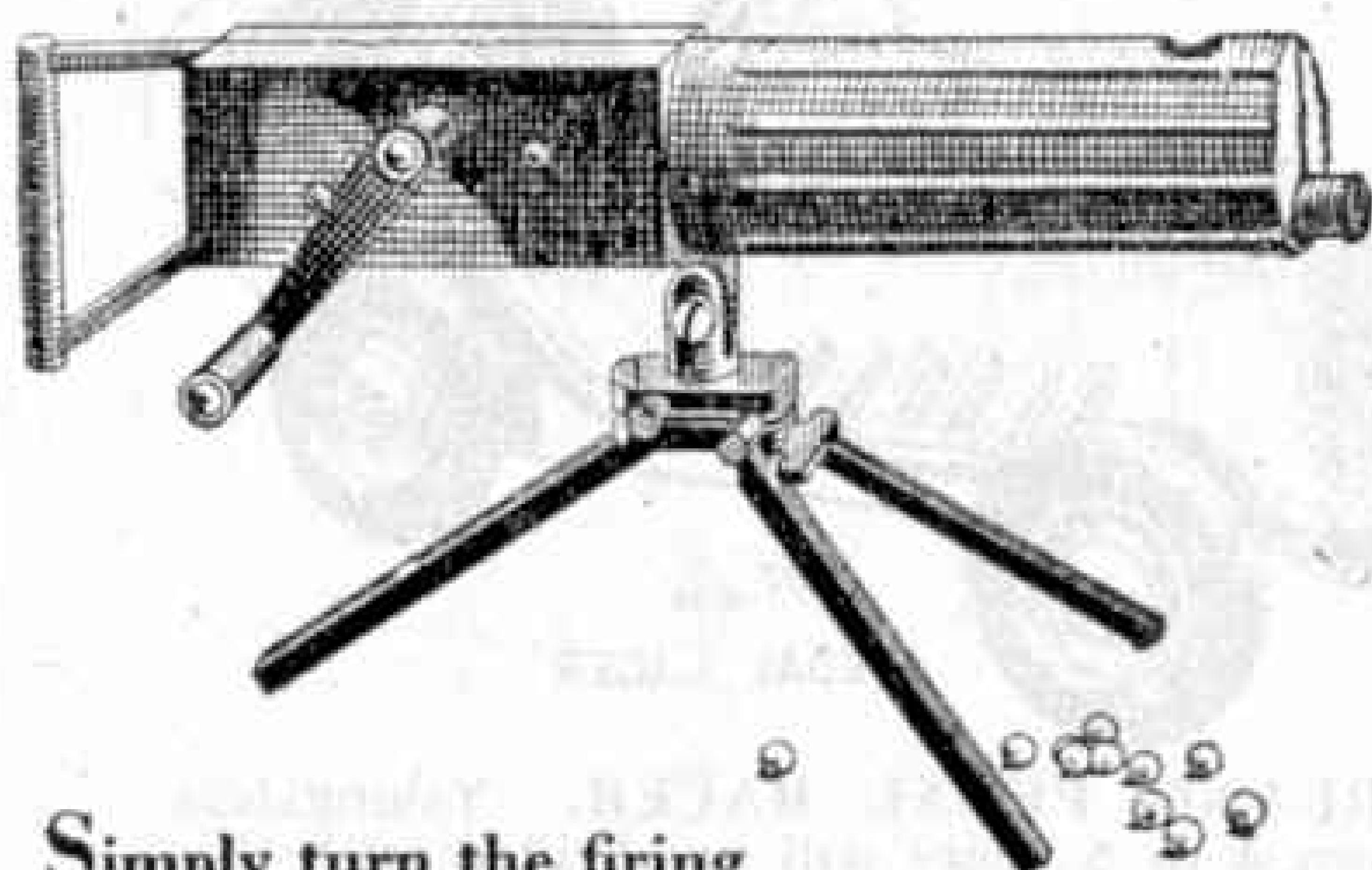
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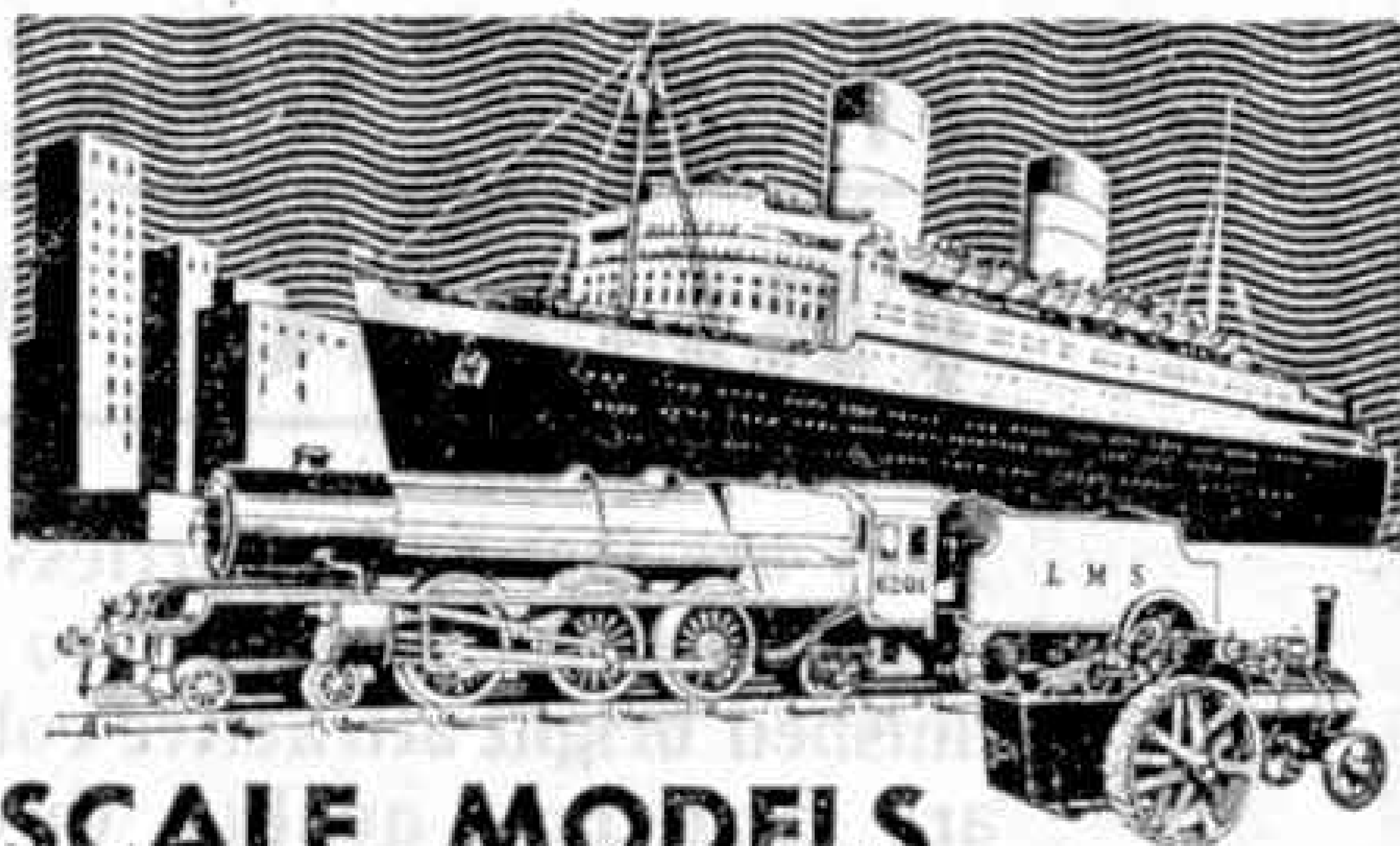
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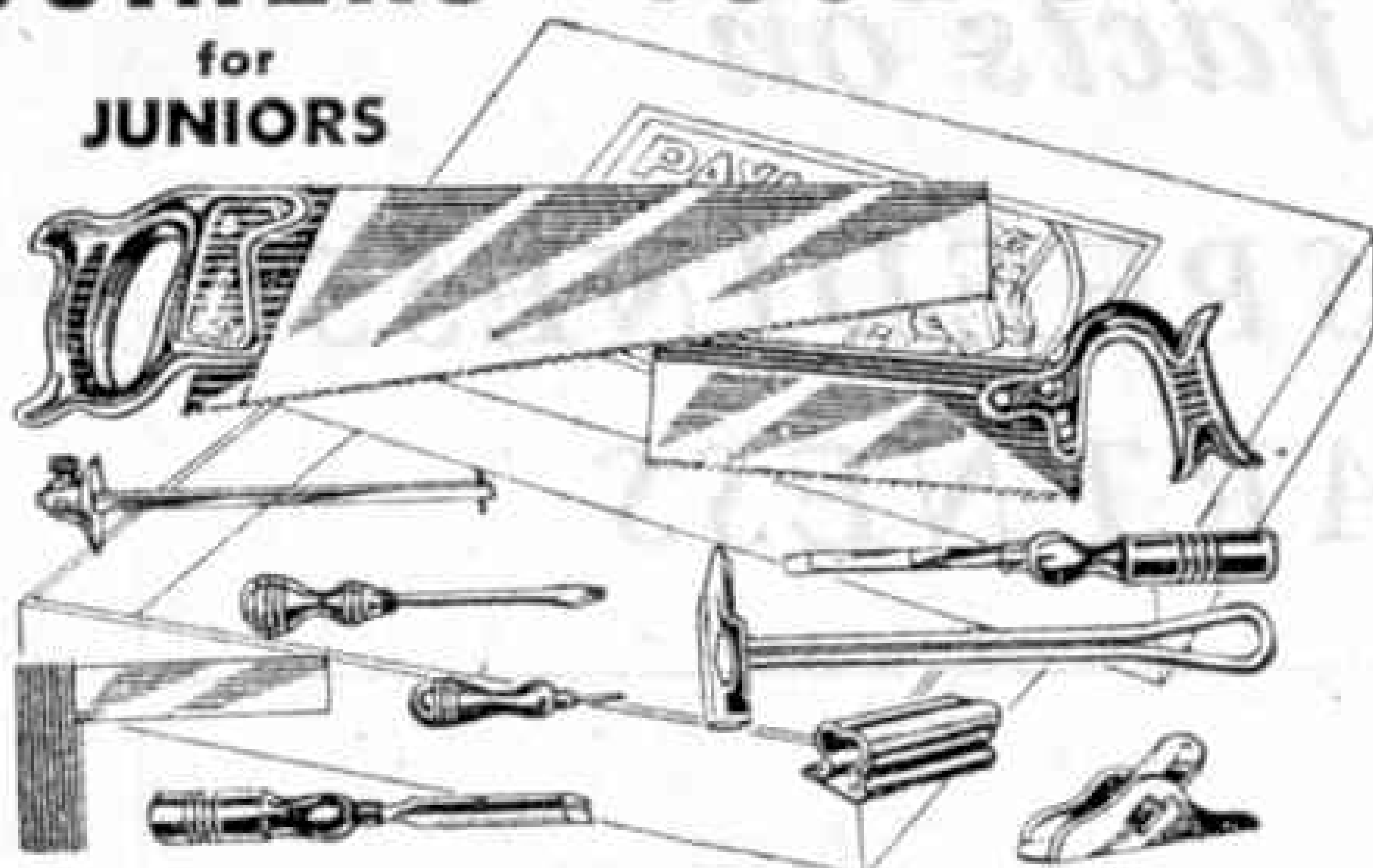
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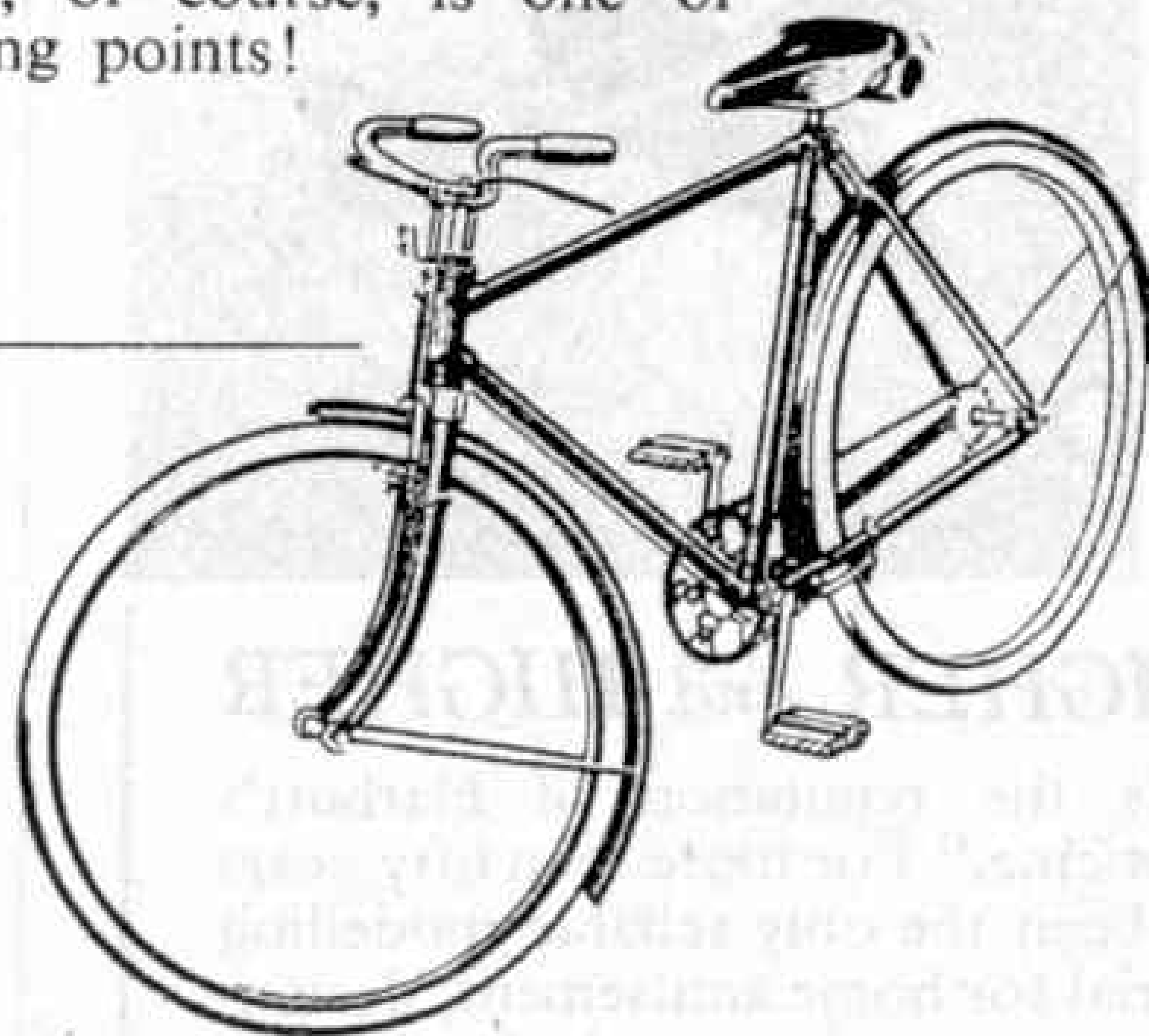


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MAGAZINE

Editorial Office:
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Vol. XXXIII
No. 8
August 1948

With the Editor

Faster Than Sound

In a brief statement to the Press on 10th June, the American Secretary for Air, Mr. Symington, announced that Captain Charles Yeager of the U.S.A.F. had "flown much faster than the speed of sound many times" in the little Bell XS-1 rocket-powered research aircraft. He did not reveal the actual speeds attained by the XS-1, but the speed of sound varies from 760 m.p.h. at sea level to 660 m.p.h. at 30,000 ft.

So Nature's last barrier to high-speed flight, the so-called "Sonic wall" of compressibility shock-waves encountered as the speed of sound is approached, has at last been overcome, significantly by a "straight-wing" aeroplane. This confirms the belief of several leading British and American designers that sweep-back is not so essential as structural strength and thin, high-speed aerofoil sections to withstand compressibility effects.

As regular readers of the "M.M." know, the XS-1 is not able to take off under its own power, but is carried to a great altitude slung under a "Superfortress" bomber and then released for its high-speed flights. This prevents it making any attempts on the World's Speed Record, at present held by another American research aircraft, the Douglas "Skystreak."

In the years ahead when high-speed air liners fly through the stratosphere to bring America within three hours of Britain, we should not forget Captain Yeager and the Bell Company, whose courage and engineering skill have pioneered supersonic flight.

Three Hundred Million Volts

When I was at school I was always thrilled when I was allowed to switch on an induction coil, to produce bright

crackling sparks between the terminals. The sparks were only an inch or so long, but they gave me and my fellow pupils great satisfaction. I suppose that similar sparks are equally delightful to schoolboys to-day, and I wonder what they would think if they could switch on a giant machine producing sparks 50 yards long. A machine of the power required actually is in existence. It is a synchrotron, in which electrons are whirled round and round in a vacuum tube shaped like a doughnut, their speed being rapidly increased to an almost unbelievable extent. The speed they reach indeed is so great that they acquire a mass 60 times their normal value and are capable of producing 30 million volt X-rays.

An even more powerful machine is now being constructed. This is a 300 million volt synchrotron that Metropolitan Vickers Ltd. are building for use in atomic research at Glasgow University. A spark with this enormous voltage behind it would be like a miniature flash of lightning.

This Month's Contents

	Page
George Stephenson 1781-1848 ..	254
A "Short" Story ..	256
by John W. R. Taylor	
Canada's Forest Giants ..	260
New Dinky Toys ..	263
London Central Line Extension ..	264
by T. R. Robinson	
A Highway Over the Sea ..	268
by H. J. Shepstone, F.R.G.S.	
Air News, 267. Books to Read, 262. Club and Branch News, 273. Competitions and Results, 284-5. Fireside Fun, 288. From Our Readers, 286. H.R.C. Pages, 278-9. Meccano Pages, 274-7. On Road and Track, 259. Photography, 272. Railway Notes, 270. Stamp Pages, 281, 283.	

George Stephenson, 1781-1848

THIS month occurs the centenary of the death of George Stephenson, who did more than any other man towards the successful introduction and development of steam railways as we understand them to-day. He was the son of the fireman of the steam pumping engine at Wylam Colliery in Northumberland. He began work at the age of eight, herding cows for twopence a day, and when 14 became his father's assistant at the colliery.

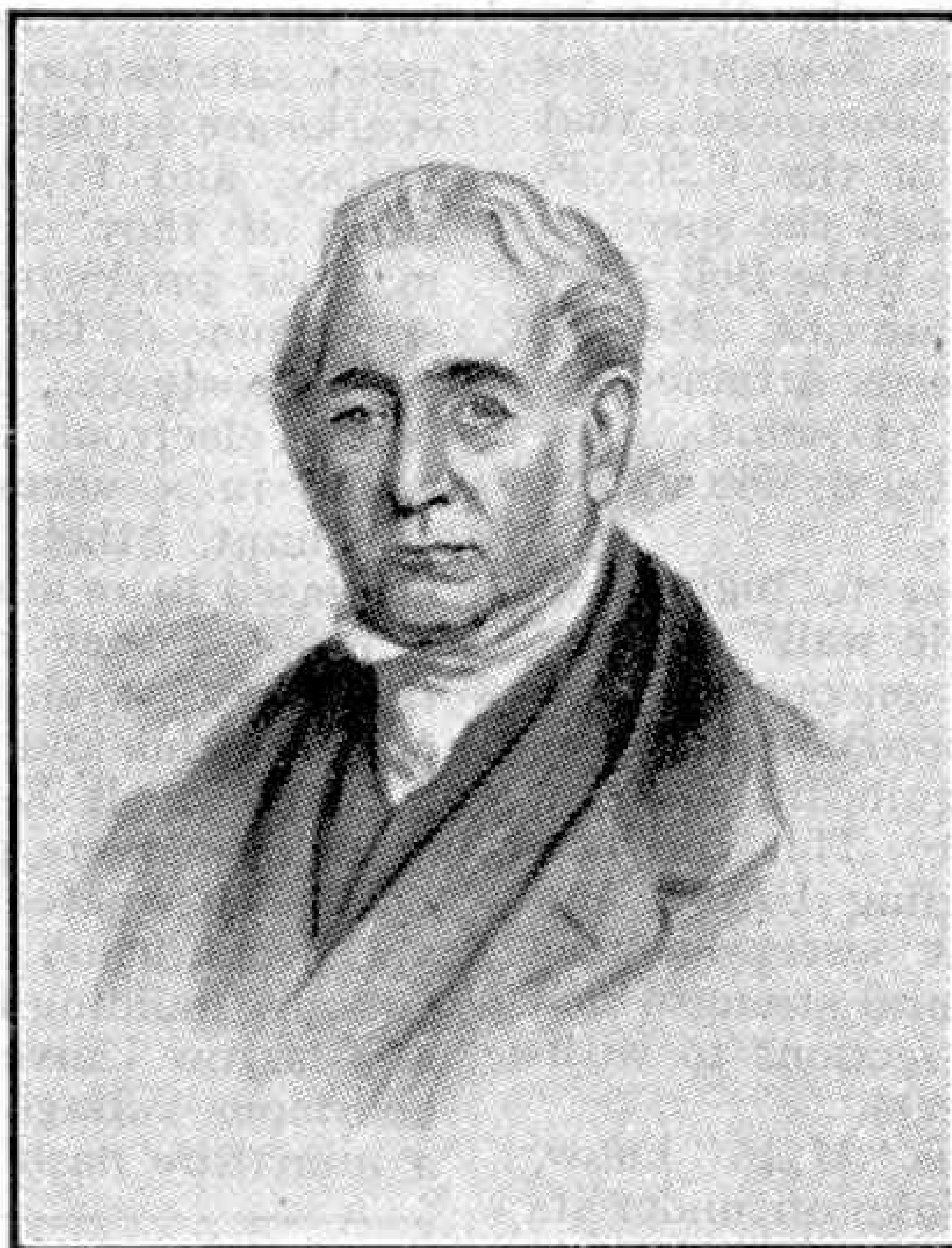
This brought him into touch with the pumping engine, with which he was extremely fascinated;

and he set to work to study its action and to understand it thoroughly. At the same time he began to make up for his lack of early education. He applied himself to these tasks so well that by the time he was 31 he was in charge of the engines and plant of the Killingworth collieries, and it was there that he was able to put into practice his ideas for the steam haulage of coal along the colliery wagonways. He had seen the quaint type of engine built by Matthew Murray for Blenkinsop's colliery line at Middleton, near Leeds. This made use of a toothed driving wheel to engage lugs at the side of the rail, thus eliminating wheel-slip. He was familiar also with the engines introduced by William Hedley on the wagonway at Wylam.

Stephenson's first locomotive was tried on the Killingworth line on 25th July 1814, and it managed to haul eight loaded wagons weighing 30 tons at a speed of about 4 m.p.h. It had a wrought-iron boiler and vertical cylinders, and motion was transmitted to the wheels by gearing. The driving wheels themselves were smooth, depending for their adhesion to the rails on the amount of weight they carried, in direct contrast to the

Blenkinsop-Murray system that had been in use at Leeds since 1812.

Although Stephenson's first locomotive was an improvement on those previously existing, his second engine was better still. The cylinders were still vertical, but the drive was taken directly to the wheels by means of connecting rods joined to cross-beams mounted on the outer end of the piston rods. Apparently several engines of this pattern were built, and it is known that one was sent to the early Kilmarnock and Troon line in Scotland.



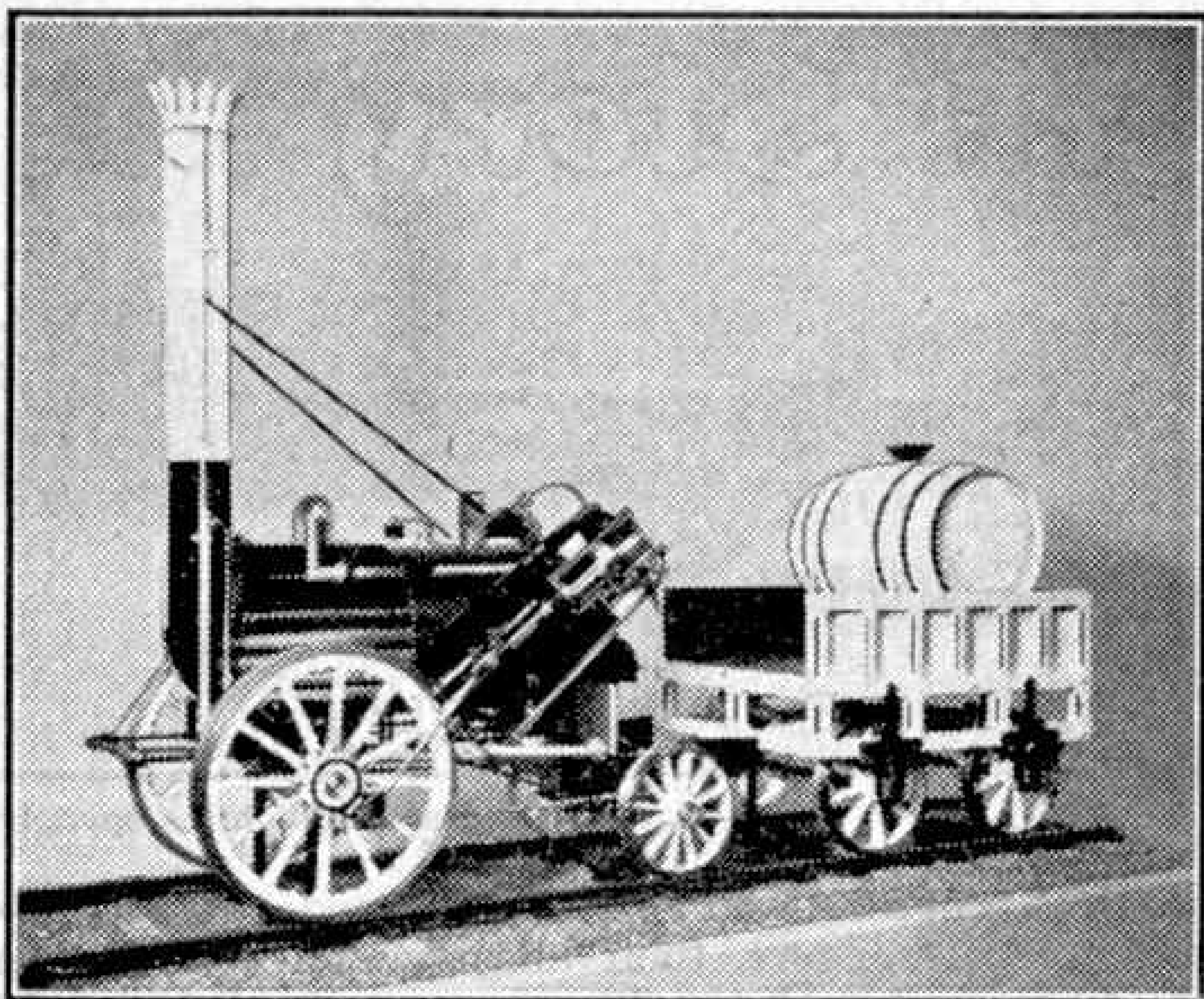
George Stephenson 1781 - 1848. His belief in the steam locomotive led to the development of the railway as we know it to-day.

Stephenson was convinced of the ultimate success of the railway, mechanically operated on a large scale, and his chance of demonstrating his ideas came with the promotion of the scheme for the Stockton and Darlington Railway. He was able to persuade Edward Pease, one of the most prominent promoters of the scheme, to give steam locomotive haulage a trial, instead of using horse power as originally proposed. A new route was then surveyed by Stephenson, who was appointed Engineer; and by an Act in

1823 the company were given power to use steam locomotives.

In order to build the necessary engines, Stephenson, together with Pease and two other partners, one of whom was Stephenson's son Robert, founded the firm known under the name of Robert Stephenson and Company. From their works, then in Newcastle, came Stockton and Darlington No. 1, "*Locomotion*," which, with its vertical cylinders and driving rods, resembled the Killingworth design of 1816.

The success of the Stockton and Darlington Railway led to the promotion of railway schemes in other parts of the country, and Stephenson, or men of his



A sectioned model of Stephenson's "Rocket" as running at the Rainhill trials. Model and photograph by Bassett-Lowke Ltd.

training, were connected with quite a number of them. The biggest undertaking of its time was the Liverpool and Manchester Railway. This was a real main line that was successfully engineered and constructed in spite of such difficulties as the crossing of Chat Moss, a great peat bog some 12 miles square, which eminent engineers of the day declared impossible. Stephenson was in charge of all the works, although the various sections of the line were under the immediate supervision of his assistants.

Before the opening of the line the question arose as to whether locomotive haulage or stationary winding engines should be employed to move the trains. In order to give locomotives a chance of proving themselves, special trials for a prize of £500 were held at Rainhill, near Liverpool. It is a familiar story to everyone how Stephenson's "Rocket" was the only competitor that satisfied the conditions laid down.

Stephenson must have been an extremely busy man. He was Engineer to the Grand Junction Railway that obtained its Act in 1833, the actual construction of the line being carried out by his assistant Joseph Locke. Together with

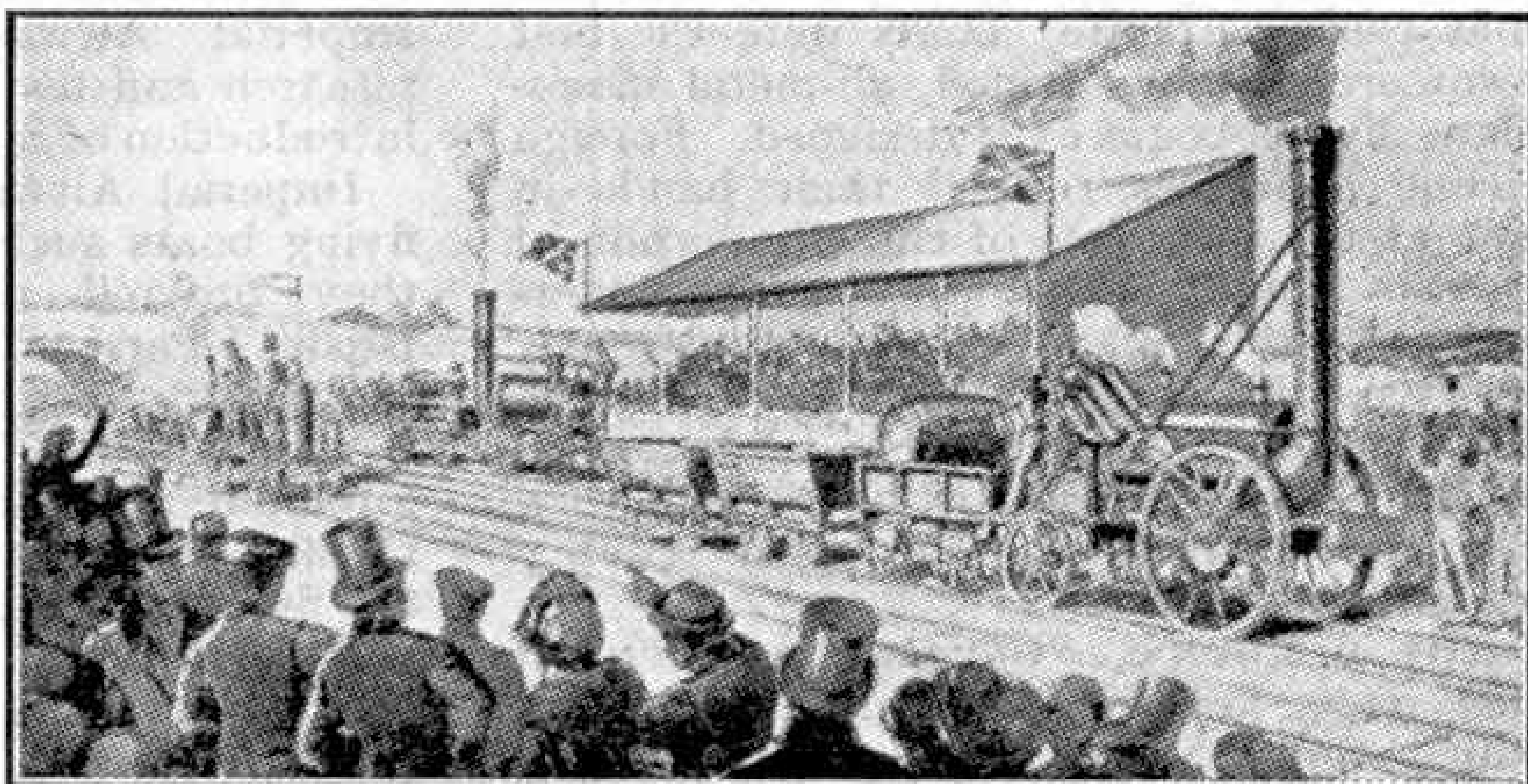
his son Robert he was appointed Joint Engineer to the London and Birmingham Railway, the son becoming the sole Engineer soon afterwards. In the north, Stephenson surveyed the Berwick and Newcastle line in 1836, and in the same year was appointed Engineer to the Manchester and Leeds Railway, which joined the North Midland—another Stephenson line—near Normanton. The North Midland, together with the Birmingham and Derby which also had been surveyed by George Stephenson, and the Midland Counties, combined together in 1844 to form the old Midland Railway.

In carrying out the construction of the North Midland the discovery of good coal at Clay Cross led to the formation by Stephenson and others of the Clay Cross Collieries.

He had a strong conviction that coal traffic from the Midlands to London, then carried by sea, would ultimately travel by rail; but this did not take place during his lifetime.

With coke works in addition, and limekilns at Ambergate, Stephenson had so many interests in the district that he took up residence at Tapton House, Chesterfield, where he lived until his death on 12th August 1848.

George Stephenson was probably not original in many things, but he was shrewd enough to see and overcome the faults of existing designs, and to adapt features of the work of others to his own schemes. He did not invent the steam locomotive, he did not invent the railway; but by his work on the two he made the steam railway a commercial possibility.



An old illustration of the locomotive trials at Rainhill in 1829, with the "Rocket" prominent in the foreground.

A "Short" Story



by John W. R. Taylor

Photograph "Flight" Copyright.

MAYBE it has something to do with our tradition as a seafaring people, but there is no doubt that flying boats have a strong appeal for many British air travellers. No company has done more to encourage and satisfy this preference than Short Brothers and Harland, whose flying boats have pioneered our Empire air routes for almost as many years as large-scale commercial air transport has been an established fact.

The story of these fine British aircraft began back in the early 1930s, when Imperial Airways operated three Short flying boats across the Mediterranean. Although they were successful and popular with passengers, there was no other evidence that a fleet of large flying boats could be made to operate successfully when, in 1935, Imperial Airways decided to order a new fleet of 28 Short S-23 flying boats to be used exclusively on all their Empire routes.

It was an unprecedented step, as the order, which totalled about £1,750,000, was placed while the prototype was still on the drawing board, in spite of the fact that these "Empire" boats were the first commercial, four-engined, all-metal monoplane flying boats ever designed. Foreign airline operators rubbed their hands in glee at the prospects of the elimination of British competition. But they underestimated the capabilities of Arthur Gouge, Short's chief designer, for the "Empire" boats were destined to give ten years of incredibly fine service, during which they flew between them well over twenty million miles.

The prototype, "*Canopus*," shown on this page, flew on 4th July, 1936, after which the others were launched at the rate of about one a month. Each was powered by four 910 h.p. Bristol "Pegasus"

engines and had accommodation for 17 passengers, their luggage and two tons of mail and freight, giving a loaded weight of 40,500 lb. They had a range of 810 miles and their maximum speed of 200 m.p.h. was as fast as that of many fighters of that time. Within a year the new "Empire" fleet was flying 113,196 miles each week on regular services, offering completely new standards of comfort and performance.

Two of them—"Cambria" and "*Caledonia*"—were adapted for the first experimental North Atlantic air mail service in the Summer of 1937, for which their fuel capacity was increased to give a range of up to 3,780 miles. In these days when Atlantic crossings are an everyday occurrence, those early flights may not seem much to shout about. But they were made at a time when radio aids to navigation were few and far between, before civilian radar and weather ships had been thought of. In consequence they called for piloting skill and aircraft reliability of an unprecedented standard. Pan American Airways co-operated with Imperial Airways in the preliminary research and test flights that preceded the introduction of regular Atlantic air services.

Imperial Airways soon found the new flying boats such a good investment that they ordered nine more, powered by Bristol "Perseus" engines and with double the range of the first series. Two of these—"Cabot" and "*Caribou*"—were fitted out for flight refuelling and operated the first regular transatlantic mail service during the Summer of 1939, being refuelled in the air by Handley Page "Harrow" tankers of Flight Refuelling Ltd. It was the first time that the scheme had been attempted as a commercial proposition and proved highly successful.

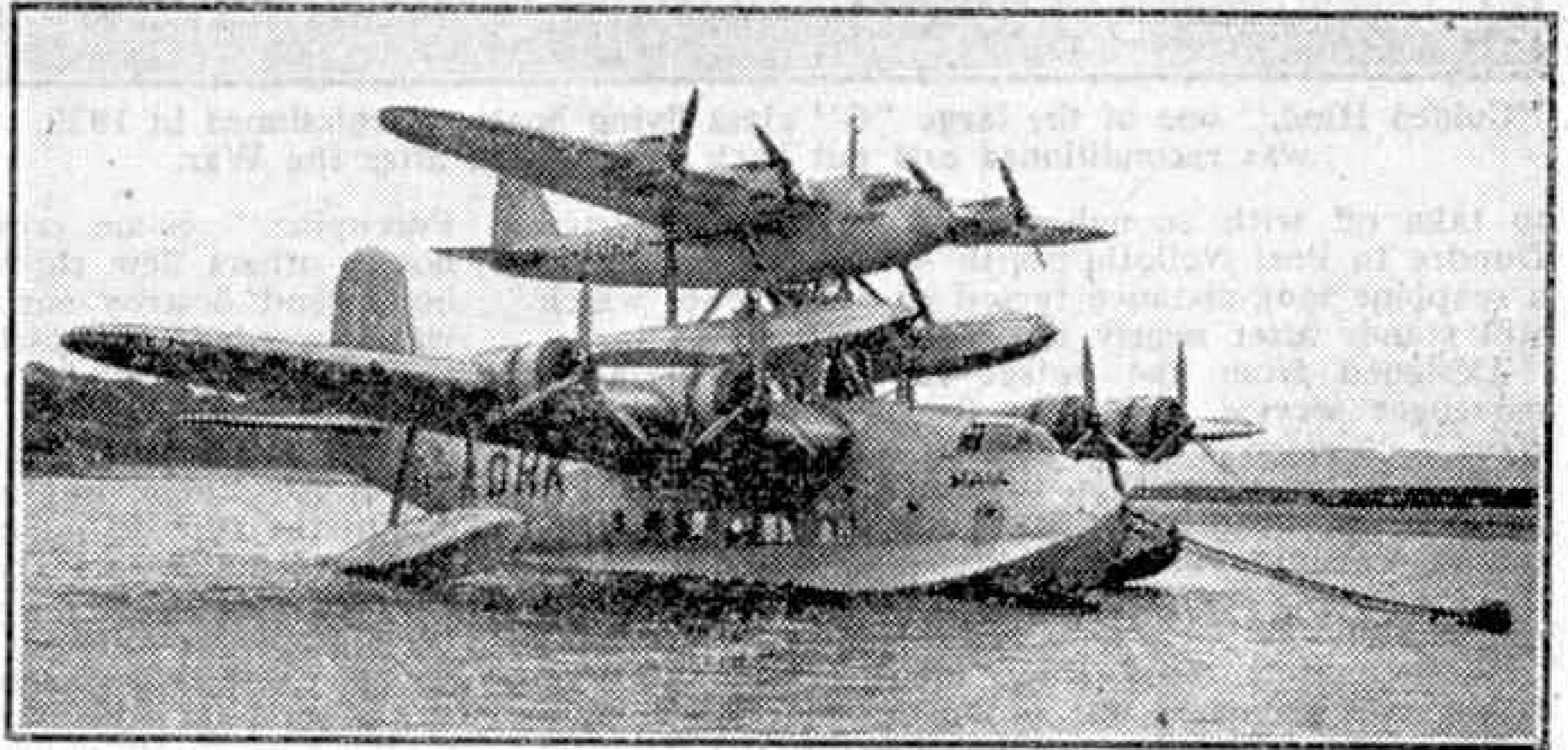
It did not take the Air Ministry long to realise that Imperial Airways were on to something good, with the result that Shorts were asked to produce a long-range reconnaissance-bomber counterpart of the "Empire" boat for Coastal Command—a task that was not as easy as it might seem. First of all more powerful engines had to be fitted—1,010 h.p. "Pegasus" 22s—then the whole fuselage interior had to be re-designed to accommodate gun positions, bombs, radio and other operational equipment instead of luxury seats for passengers. This was not simple, as Uncle Arthur and Aunt Sarah form a considerably less concentrated load than a 500 lb. bomb!! But it was all done, and done very ingeniously.

For example, the designers did not want to hang the bombs out in the open under the wings as this would spoil the aerodynamic cleanness; on the other hand it is not very practicable to cut holes for bomb doors in the bottom of a flying boat hull. So a compromise was arrived at, in which the bombs were carried on racks inside the fuselage and then slid out on rails ready for dropping as the target was approached.

The "Sunderland" Is of 1938 could carry a payload of up to 5,180 lb. for 1,920 miles at 178 m.p.h. Obviously, they opened up new possibilities for long-range sea patrol and bombing, and so the Air Ministry awarded Shorts a contract for a

large number of "Sunderlands"—a decision for which they had good reason to feel thankful later on.

But in 1938 it still seemed possible that war could be averted, and so Shorts also continued development work on their civil flying boats. Their next products were the Short-Mayo Composite aircraft and three almost twice-size scaled-up

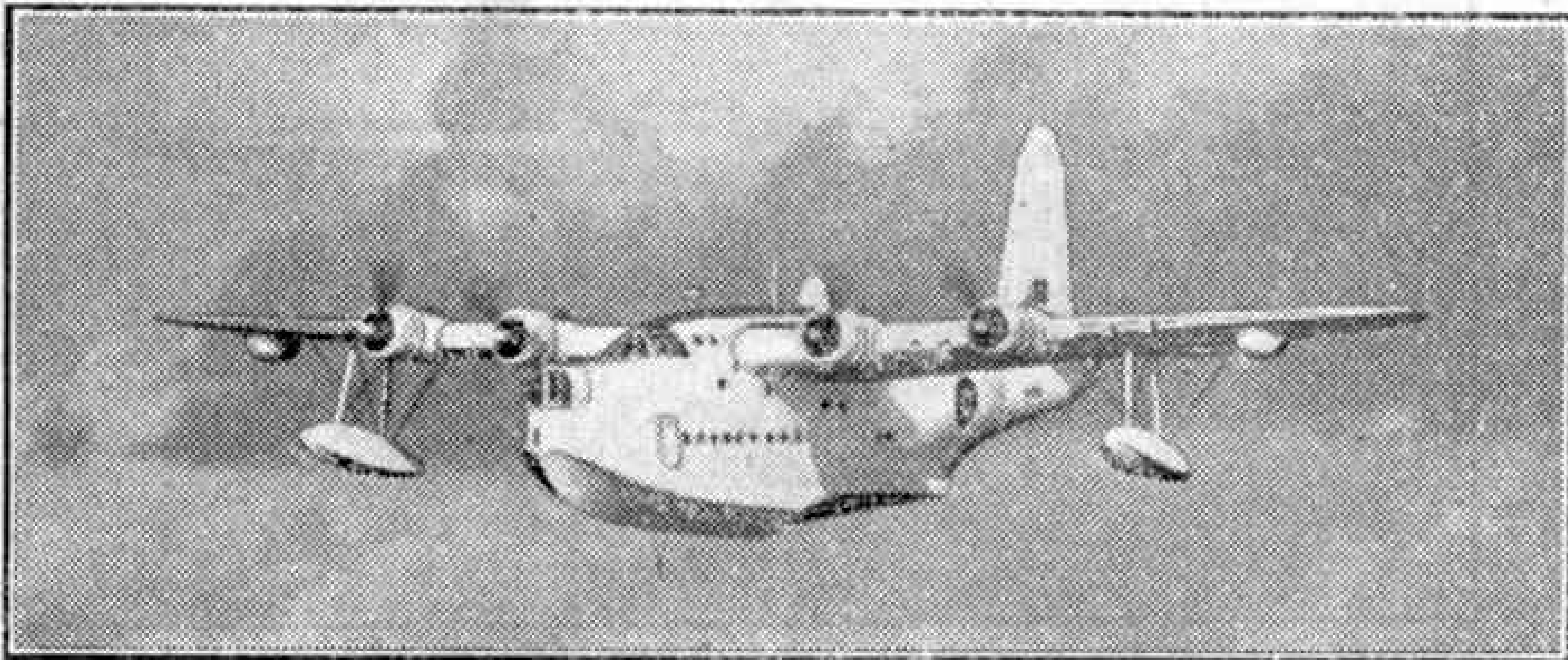


The Short-Mayo Composite Aircraft. Photograph by courtesy of "Flight."

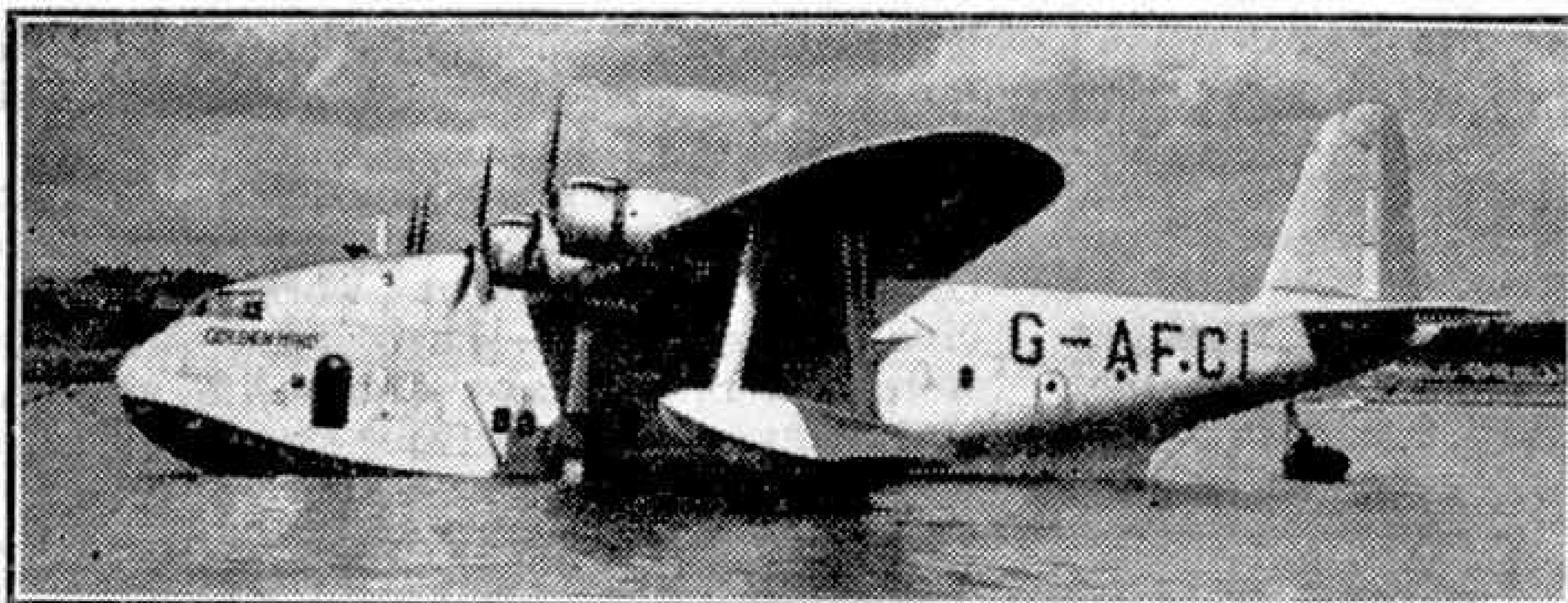
"Empire" boats which they designated the G-class.

The Mayo Composite aircraft was an up-to-date development of an assisted take-off idea first tried out in Britain during the first World War. It is, of course, well known that an aeroplane can fly with a much greater load than it can take off with, and the principle of the Composite scheme is to give a small, heavily-loaded aeroplane a great deal of extra power and wing area during take-off by carrying it into the air on the back of a large, lightly-loaded machine. The two aircraft are then separated at a pre-determined height.

In the case of the Short-Mayo Composite, the lower component, "Maia," was a modified "Empire" boat, which carried on its back a small fast sea-plane, "Mercury," powered by four Napier "Rapier" engines. The whole thing worked very well, so well in fact that "Mercury," piloted by Capt. (now Air Vice-Marshal) D. C. T. Bennett, was able



An R.A.F. "Sunderland" V flying boat, complete with radar equipment under its wings. Photograph by courtesy of Short and Harland Ltd., Belfast.



"Golden Hind," one of the large "G" class flying boats commissioned in 1939. She was reconditioned and put back into service after the War.

to take off with enough fuel to fly non-stop from Dundee to Port Nolloth, South Africa, and so set up a seaplane long-distance record of 5,995 miles which still stands after nearly ten years.

Designed from the outset for the transatlantic passenger service, the three G-class boats—"Golden Hind," "Golden Fleece" and "Golden Horn"—were even more luxurious than their predecessors. As well as spacious, beautifully fitted-out cabins, they contained dressing rooms, and a cocktail bar connected to a galley complete with electric cooker and refrigerator.

Unfortunately, only three months after "Golden Hind" was launched war broke out and the G-class had no chance to show their paces on the Atlantic run. Instead they were fitted with gun turrets and joined the "Sunderlands" in service with the Royal Air Force, while the "Empire" boats were made available to carry war supplies and V.I.P.s quickly to anywhere they might be needed.

Flying always unarmed, often through war zones, the courage of the merchant airmen flying these civil boats was of the highest order, their contribution to final victory immeasurable. They paid a high price for their daring. "Cabot" and "Caribou" were destroyed during the Norwegian Campaign and "Golden Fleece" was lost off the French Coast. Later, when the war spread to the East, the indomitable "Empire" boats were still in the thick of the battle, and "Cassopeia" was lost during operations at Sabang, while "Corio" was shot down by a formation of Jap fighters off Timor. Others evacuated refugees from Singapore up to a few hours before the surrender and then carried on the good work in the Dutch Indies—at a cost of five more of their number, "Circe," "Corinna," "Centaurus," "Coogee" and "Calypso."

But their achievements were incredible. When the Battle of Britain was at its height "Clare" and "Clyde" flew newspapers to New York, telling the sceptical Americans of crippling defeats being inflicted on the Luftwaffe by Fighter Command. Later "Cambria" and "Coorong" evacuated 469 people from Crete under the noses of the enemy. So throughout the war years the fleet of 42 "Empire" and G-class boats grew smaller but did a tremendous job keeping open vital Empire life-lines, including the famous "Horseshoe" route from Durban to Calcutta.

Great deeds of gallantry and endurance were performed also by the crews

of Coastal Command in their "Sunderlands." Only 15 days after that fateful 3rd September, 1939, two were put down in a heavy swell to pick up survivors from the torpedoed merchant ship "Kensington Court." Another, attacked over the North Sea by six Junkers 88s, shot down one, forced another to land in Norway and then returned to its base, so earning from the Luftwaffe the nickname of "Flying

Porcupine." Some crews stayed on patrol for 15 hours; others flew through incredibly heavy *flak* to bomb and destroy surfaced U-boats, and one pilot was awarded a posthumous Victoria Cross for crashing his "Sunderland" into the U-boat that had shot it to pieces.

Altogether, 738 "Sunderlands" were built for the Royal Air Force, but in 1943 Shorts decided to redesign the type to incorporate all the lessons taught by four years of war. The result was the "Sunderland" IV with four 1,740 h.p. "Hercules" motors; but this version was so different from the earlier Marks that Shorts decided to rename it "Seaford."

The end of the war prevented the "Seaford" carrying on the "Sunderland's" reputation as Coastal Command's No. 1 U-boat killer, and, although it continued in small-scale production, its civil counterpart the "Solent" gradually assumed more importance. It is, in fact, the "Solent" which has recently gone into service on B.O.A.C.'s *Springbok* route to South Africa, offering passengers one of the most exciting and picturesque journeys in the world, while combining the speed of air travel with the luxury of a private yacht.

The "Solents" form only part of Britain's present flying boat fleet, for B.O.A.C. have never lost faith in flying boats, even though foreign airline operators switched over to 100 per cent. landplane services long ago. Towards the end of the war, they were able to acquire 21 "Sunderlands" which they completely reconditioned for passenger work, with nicely-appointed cabins. Several of these "Hythe" class boats are still in service on routes to Bahrain, Karachi and Sydney, and have proved extremely efficient and comfortable. (Continued on page 287)

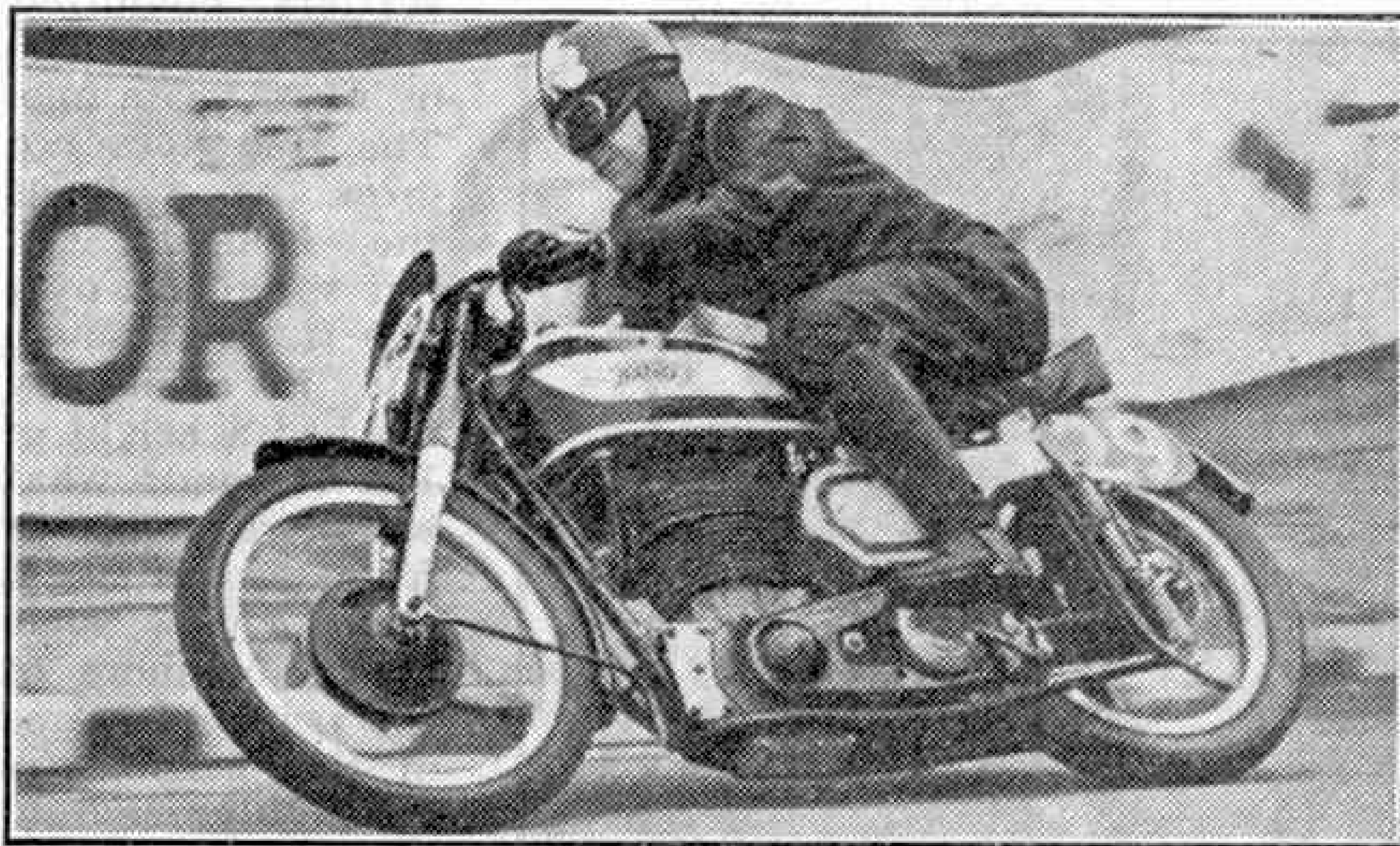


"Scapa," one of the new Short "Solent" luxurious flying boats, is here seen passing over the Needles at the Isle of Wight. Photograph by courtesy of British Overseas Airways Corporation.

On Road and Track

Motor Cycle Thrills

This year's T.T. motor-cycle races in the Isle of Man were full of interest throughout. In the Senior event the Italian rider O. Tenni on his twin Guzzi made a great bid for victory. He achieved the fastest lap at a speed of 88.06 m.p.h., but encountered trouble in the 7th lap and finished 9th. The race went to the Nortons, who made a complete sweep of the first three places. The winner, who is shown at speed in the upper illustration on this page, was



A. J. Bell, Norton, the winner, at speed in this year's T.T. race in the Isle of Man. His average over the 264 mile course was 84.969 m.p.h. Photograph by J. E. Barnes, Douglas.

A. J. Bell, who rode a splendidly judged race throughout, with a speed of 84.96 m.p.h. Following him, over 10 minutes behind, was W. Doran, whose speed was 80.33 m.p.h., and third was J. A. Weddell at a speed of 79.56 m.p.h. Until the last lap another Norton ridden by H. L. Daniell was hard on the heels of Bell, but met with transmission trouble and had to retire in the last round.

A. J. Bell, winner of the Senior race, had previously taken third place in the Junior event, the winner of which was F. L. Frith on a Velocette, whose speed for the entire race was 81.59 m.p.h. Second was A. R. Foster, also on a Velocette, with a speed of 79.55 m.p.h. Bell's speed was 78.97 m.p.h.

The Italian Guzzi provided the winner of the lightweight race. The rider was M. Cann whose speed was 75.175 m.p.h., R. H. Pike on a Rudge at 71.85 m.p.h. and D. St. J. Beasley on an Excelsior at a speed of 67.68 m.p.h. being second and third respectively.

The Clubman's T.T. events also provided some brilliant racing, the outstanding achievement being that of the 998 Vincent-H.R.D. in the Senior class, this machine capturing six of the first 10 places. First and second places were taken by J. D. Daniels and F. P. Heath, both on this make, but the greatest sensation was the failure of G. Brown, who also rode a 998 Vincent H.R.D., as this competitor was leading until almost within sight of victory. Then he ran short of petrol, possibly the result of too hurried filling at his pit stop. He coasted downhill and pushed his heavy machine the rest of the way, and so managed to get into 6th place after appearing a certain winner. The Nortons scored again in this race, C. A. Stevens riding a machine of this class into

third place. They promised well also in the Junior race, but a Velocette ridden by R. J. Hazlehurst took first place, at a speed of 70.33 m.p.h. G. W. Robinson on an A.J.S. was second at 70.02 m.p.h. and M. Sunderland brought his Norton in third at 69.58 m.p.h.

Mays Wins Again at Shelsley Walsh

For the second year in succession Raymond Mays, the present holder of the R.A.C. British Hill Climb Championship, made the fastest time in the Shelsley Walsh Hill Climb; in his E.R.A. he completed the course in 37.89 sec. Another very fine performance was that of E. Brandon, who in a 500 c.c. Cooper recorded the excellent time of 44.16 sec.

Other good climbs were made by R. D. Poore (Alfa-Romeo), whose time of 39.16 sec. was second best of the day, and F. R. Gerard, driving the E.R.A. which had sustained extensive damage during the Brighton Hill Climb the previous week, who made the ascent in 39.41 sec. E.R.A. cars won the team prize, the drivers being Mays, Gerard and Ansell.

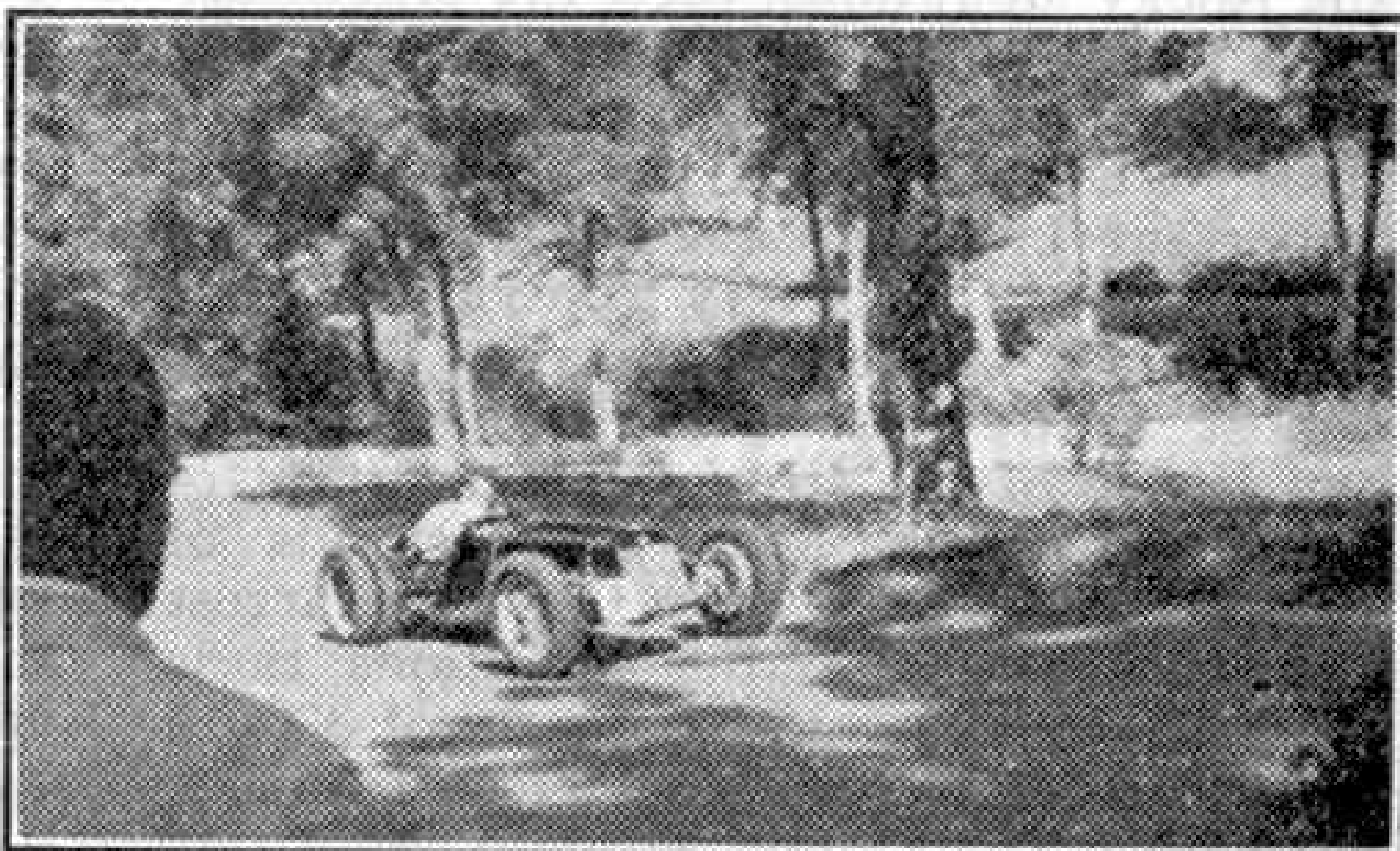
The Prescott Hill Climb

Prescott on 13th June provided entertaining afternoon's sport. The weather was perfect and many excellent climbs were made, the most astonishing performance being that of J. Cooper, who in his 1-litre Cooper averaged 47.06 sec. and was first in the

1,500 c.c. racing class. Gerard (E.R.A.) won the 2,000 c.c. event in grand style and recorded the fastest time of the day, 46.24 sec. S. H. Allard (Allard) was fastest in the over 2-litre racing class, with K. Hutchinson (Alfa-Romeo) less than a second behind.

British Grand Prix Course

There is a prospect of British Grand Prix motor races again, run on a course at Silverstone, near Towcester. The circuit will be about 3.8 miles. It will be on a disused R.A.F. airfield. At the time of writing negotiations for the disposal of this are in progress between the Air Ministry and the R.A.C., and the success of these is not doubted.



Rounding the hairpin bend at Prescott. R. Havershon in a Delage in the 1947 event. Photograph by J. Macdonald.

Canada's Forest Giants

CANADA can fairly be described as a land of forests, for its wooded areas cover a million and a quarter square miles, or more than one third of the total land of the country. Not all of this forest land is actually yielding timber. Large parts of it are as yet difficult to reach, while in others the trees are not of satisfactory size or quality; but the actual productive portion is nearly half a million square miles in extent, and there is a reserve nearly as large of forest that is certainly productive, but requires more transport facilities for its development.

Most of Canada's timbers are softwoods, that is the woods of pines, firs and allied trees. The demand for softwoods is greater than that for the hardwoods, such as birches, maples and elms, which lose their leaves in winter, and Canada has within its borders the principal reserves of softwoods within the British Empire.

About three quarters of the trees in Quebec and Ontario are of this type, and in British Columbia, on the Pacific side of the Rocky Mountains, there are practically no hardwood trees that are of commercial value. Spruces are the most common trees in Canada; their wood is the most important kind of Canadian lumber and is produced in every province. The Douglas Fir is next important. It comes almost entirely from British Columbia and is one of the strongest and stiffest of Canadian woods. The great stands of Douglas Fir have in them Canada's largest trees, for in favourable conditions these magnificent firs grow to a height of 300 ft., with massive trunks from 50 ft. to 55 ft. in girth. They grow straight and tall, and make splendid masts for ships. The famous flagstaff at Kew Gardens is the

stem of a Douglas Fir.

The hemlock, the white pine and the yellow birch are next in order and importance among Canadian trees. The white pine is a particularly interesting tree, peculiarly American in type. A primeval forest of white pines extended over an enormous part of Eastern Canada and the United States when pioneer

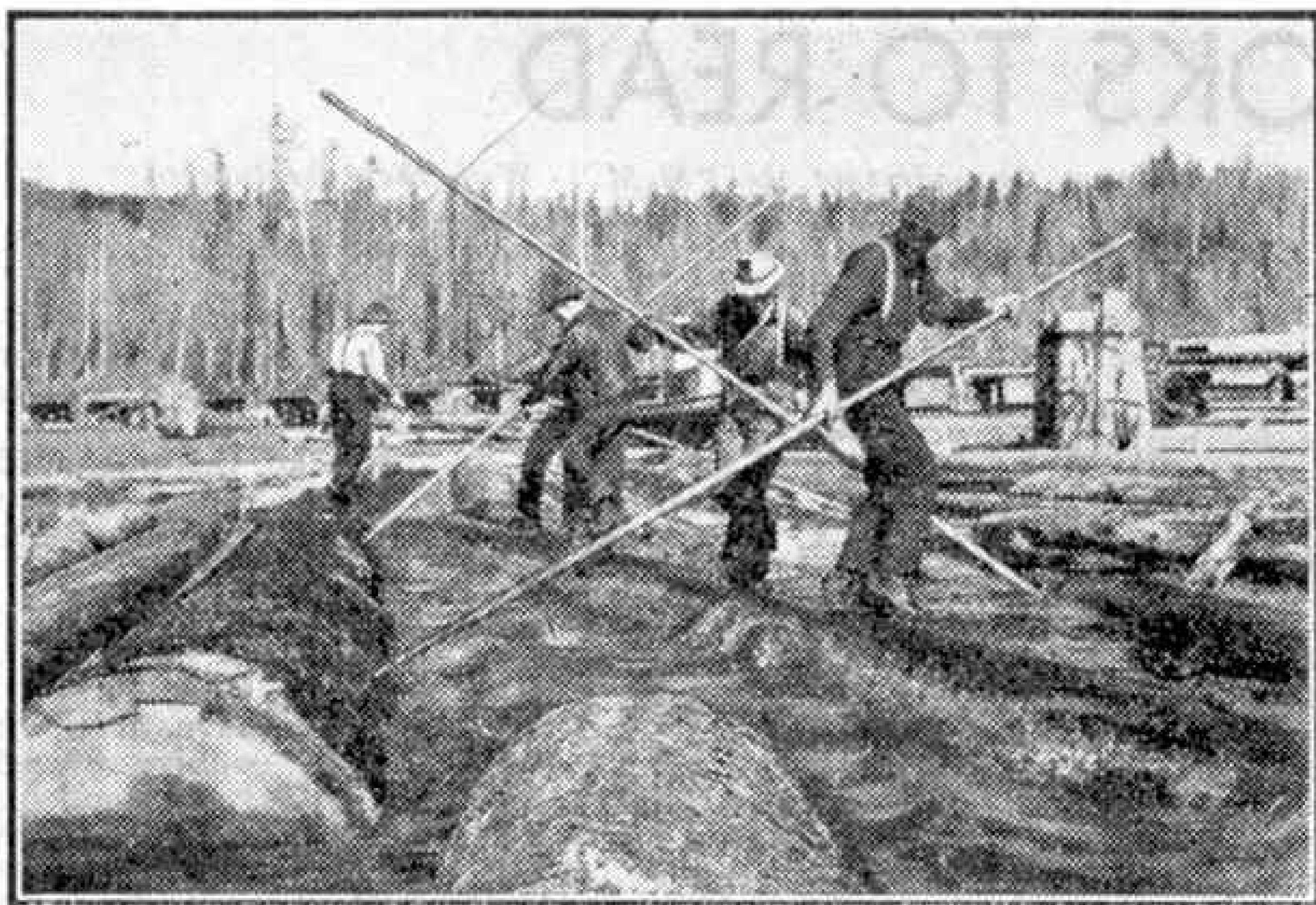
settlers colonised North America 300 or more years ago. The tree does not grow as tall as the Douglas Fir, but specimens over 200 ft. are known, and it commonly reached a height of 150 ft. and, what was more important from a practical point of view, some 80 ft. or more of the trunk of a tree of this height was absolutely free from branches and so straight and thick that it was ideal for ship's masts. At one time the great mast sticks sold for £100 each. They were used on a huge scale by the British Navy, the ships of which

had had masts pieced together of firs from the Baltic before the American tree trunks were shipped across the Atlantic. The first white pines to reach Great Britain were brought in 1605 by Captain George Weymouth, who gathered seeds and young trees as well as logs. For this reason it is usually called the Weymouth Pine in England, where it does not grow so well as in America.

Lumbering and lumber camps have long been familiar to us from stories written about them, but indeed the cutting of timber and its despatch to the mills is romantic enough to need no special stories. The camps are established deep in forests and the lumberjacks set out first to mark out the most suitable trees and to fell them. Felling trees is hard work, but it is also an art. The



Fellers notching a tree on one side from a springboard. The illustrations to this article are reproduced by courtesy of the National Film Board, Canada.



Boom men pole spruce logs to make up a raft to be floated to a lumber mill.

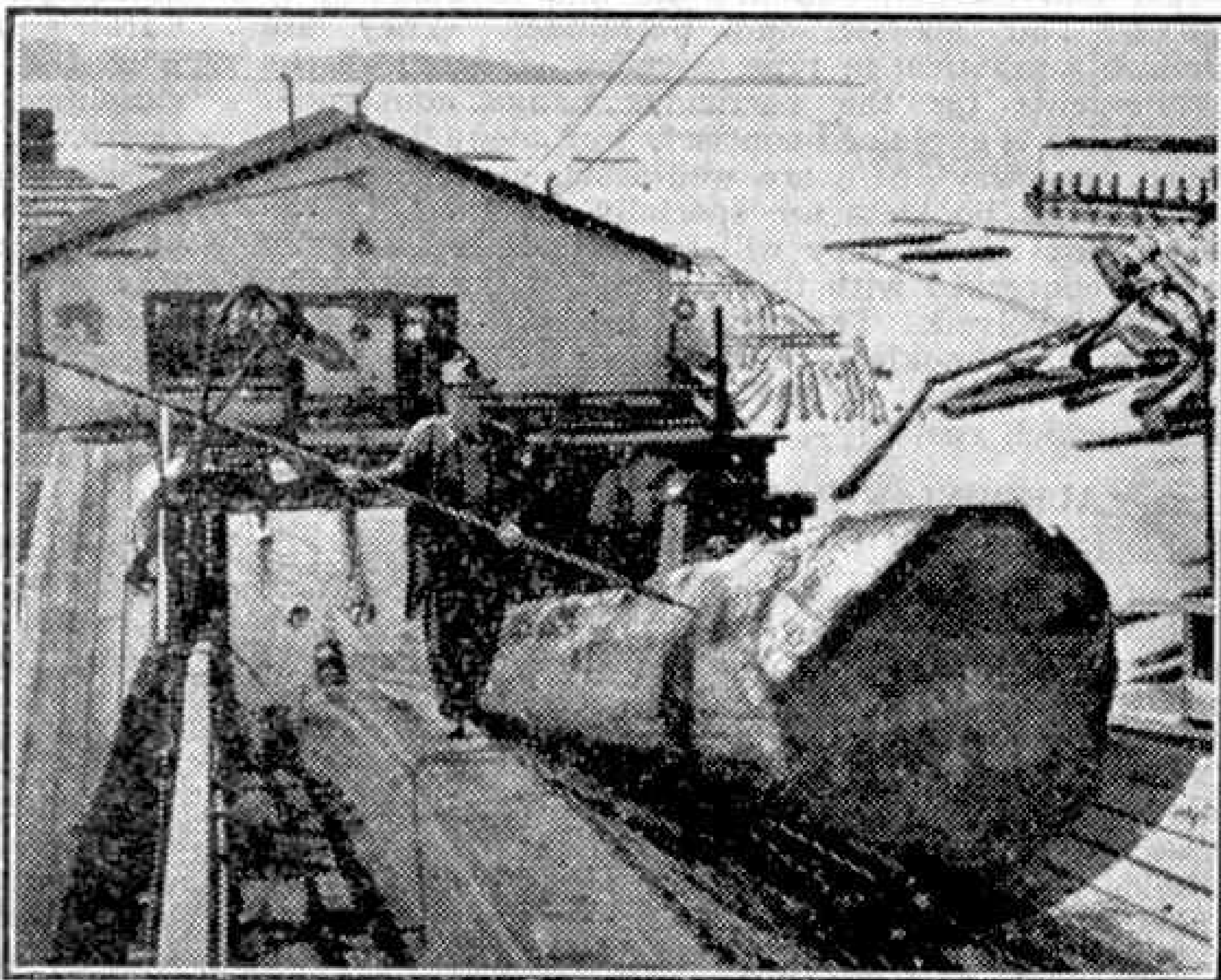
Logging railways indeed now play a prominent part in wood cutting. They are usually of narrow gauge. The logs are hoisted up by means of an overhead cable system, and loaded on the flat cars of the logging train, which is then hauled away by the picturesque locomotive. The ground over which a logging railway is constructed is rough and uneven, and hollows are crossed on trestles built of timber. Our cover this month shows a typical logging train crossing a viaduct of this kind in the island of Vancouver, British Columbia.

first step is to cut out a notch a foot or more in depth on one side, a task that is carried out with the aid of giant two-bladed axes swung by brawny arms. This is done on the side towards which the tree is to fall. Then the buck saw is brought into use, a long two-handled tool. Sawing takes place on the opposite side to the notch, and the tree slowly bends away from the saw teeth, which consequently do not bind in the cut. The movement at first is almost imperceptible, but as the saw cuts deeper into the wood the tree begins to lean over and finally crashes to the ground, falling within an inch or two of the position planned for it, so accurately is the original axe cut made. The branches are then trimmed off.

Moving the mighty logs requires special methods. In Eastern Canada cutting is carried on in the autumn and winter months, and there the spruce logs are piled on the ice. Tractors are now largely used, although the horse is still far from being superseded, and where the ground is suitable logging railways are constructed to bring the logs down to the rivers. The heavier logs of British Columbia, where operations continue throughout the year in most instances, are usually assembled by donkey engines and cable systems, and tractors and logging railways are largely used to carry them to the mills, or to the lakes, rivers and arms of the sea by which they are transported.

Most of the timber finally reaches the saw mills by water. In Eastern Canada the logs piled on the ice in winter are carried downstream on their way to the mills when the spring thaw comes. They are usually assembled in dams or pools, from which they are hauled up into the mills by endless chains provided with spikes that grip them. Each log in turn is poled into position to climb the jack ladder, as this device is called, and the lumbermen perform miracles of agility and balance when they have to stride out on the logs themselves, with their long spiked poles in hand, to move them on their way to the saws.

Poling is certainly one of the most spectacular operations (Continued on page 287)



A log speared by the double teeth of the jack ladder climbing up into the mill for sawing.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, these should be ordered through a bookseller.

"CANALS"

By H. NEWTON (Ian Allan. 3/6)

Many readers will be surprised to learn that even to-day there are more than 40 canal systems in Great Britain, with a total length of about 2,500 miles. They are extensively used, especially in the Midlands and North, and are sufficiently important to deserve a good booklet such as this. Most of the canals dealt with are of course historic, and many of our most famous engineers of the days before railways were concerned with their construction. The efforts of these pioneers are referred to in the introductory section on the English canal system, and further details of their work are given in the accounts of the separate canal systems. Here are many famous names, from the Bridgewater, Grand Union and Aire and Calder waterways to the Manchester Ship Canal.

There is much more than history or statistics in the booklet. From it we learn something of the actual progress of a canal boat on one of its trips, find how traffic is controlled, see how locks are negotiated and how progress is made through tunnels. A particularly interesting section deals with the "monkey boat" or "narrow boat," which was specially designed for carrying general cargoes along the waterways. The lives led by the canal workers and their families who actually live in the boats make attractive reading, and there are many very interesting photographs of canal scenes in all parts of the country.

The booklet ends with a name and number list of Grand Union boats, a table of details of Britain's canals giving notes of special value to yachtsmen, and a map. Copies can be obtained from Ian Allan Ltd., 33, Knollys Road, Streatham, London S.W.16, 3/8½ post free.

A SCOUT BADGE TEST SERIES

(Brown, Son and Ferguson Ltd.)

We have received copies of 13 booklets of a series designed to aid Boy Scouts to qualify for various badges. These are numbered 9 to 21 in the series, and cover a wide range, from stamp collector; observer, stalker and tracker; and first-aid and ambulance, to signaller, air spotter and pathfinder. They are admirably practical in type, covering in detail all the requirements for the particular badge concerned. Everything is explained concisely but adequately, and where necessary there are well-designed diagrams.

While the booklets are specially designed for the use of Boy Scouts they will be found interesting by anyone concerned with the elements of the particular pursuit involved. The prices too are reasonable, most of the booklets being either 6d. or 9d.; the exception is one on the hobbies and handicraft badge, which costs 1/-.

"CALEDONIAN RAILWAY CENTENARY"

(Stephenson Locomotive Society. 5/-)

Many will welcome the appearance of "Caledonian Railway Centenary," although publication has been delayed. The book forms a compact and complete record of the "Caley" and its activities from its earliest days until its absorption in the former L.M.S. Those who knew the system in its days of proud independence will be glad to have this reminder; those who were not so lucky will treasure its authentic, detailed information and its illustrations of engines, trains, steamers, seals and specimen tickets.

After tracing the origin and development of the system, Caledonian locomotives and their work, and passenger and goods rolling stock are dealt with, and there is an interesting section on the now almost

legendary Caledonian liveries. The famous steamships of this popular Scottish railway also are described, and various lists, maps and plans complete a splendid record.

Copies of this welcome addition to the published records of pre-grouping days can be obtained from Mr. R. A. H. Weight, 198, St. Helen's Road, Hastings, Sussex, price 5/4, including postage.

"THE COLONEL STEPHENS RAILWAYS"

By R. W. KIDNER (Oakwood Press. 2/-)

Most readers of the "M.M." will have heard of the various small railways of this country owned and developed by the late Colonel H. F. Stephens, who was a sort of light railway champion. There were five of these, the Kent and East Sussex, the East Kent, the Shropshire and Montgomeryshire, the Weston, Clevedon and Portishead, and the West Sussex or Selsey Tramway. The two last named have now ceased to run, and the Shropshire and Montgomeryshire is in W.D. hands. The remaining two are still carrying on with their aged locomotives and rolling stock.

All these lines had the usual light railway characteristics and a varied collection of engines and rolling stock, much of which dated well back to the nineteenth century. The booklet, the first edition of which appeared in 1936, gives full details of each, with sketches and illustrations from photographs, and provides a valuable record of these examples of the steam-operated light railway, a type that is gradually vanishing. Copies can be obtained from The Oakwood Press, Tanglewood, South Godstone, Surrey, price 2/2 post free.

"MODEL RAILWAY SIGNALS"

By ERNEST F. CARTER

(Percival Marshall and Co. Ltd., London. 3/-)

In miniature railway practice signalling is apt to be neglected, and where signals are provided they are sometimes used more for their scenic effect than for practical reasons. This is a pity, because the signalling system is one of the most interesting features of equipment and operation of British railways. Mr. Carter's booklet therefore is welcome, as it shows how the basic principles of the systems may be simplified and brought into practical use in the restricted space of a model railway.

Successive chapters deal with the uses of signals, the general principles of construction, and the making and operation of miniature signals of various types. The correct positioning of the signals on a layout is important and this has a chapter all to itself. Good use is made of diagrams throughout the booklet.

NATURE'S TREASURE SERIES

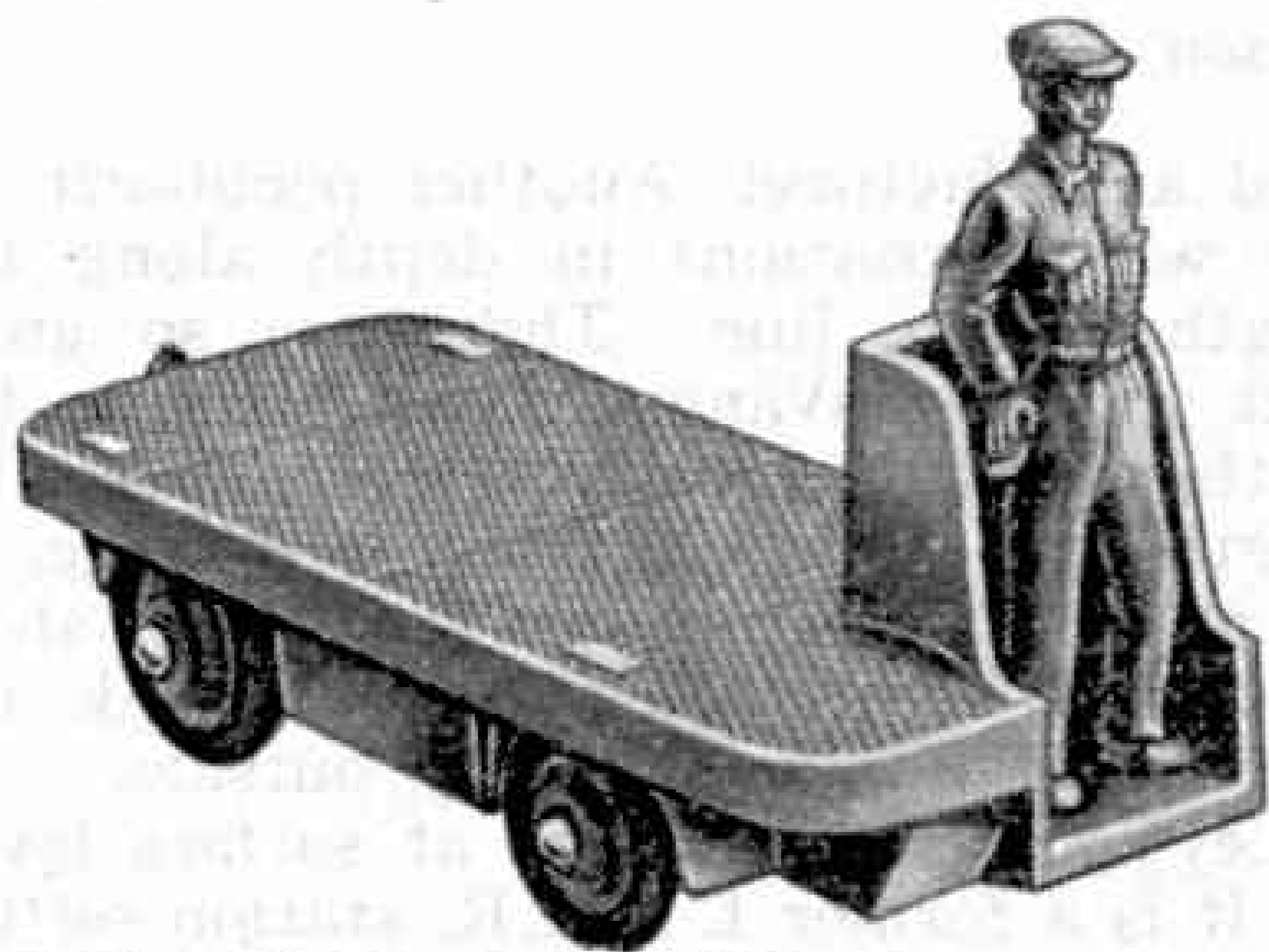
(Frederick Warne and Co. Ltd. 10d. each)

These three booklets were written to convey to children the great things that Nature has to offer. The first is "In The Beginning" by K. S. Allan, and it tells the story of the world from its beginning down to the coming of the Iron Age. In "Sea and Seashore" Mr. I. O. Evans deals with the treasure that nature provides at the seaside, explaining the waves and the tides, sea breezes and ocean currents, with notes on many other little things that holiday makers on the shore can see. In "Hidden Treasures" Mr. Evans goes underground, describing the rocks that lie below our soil and the fossils in them that tell us something of the plant and animal life of past ages.

The booklets are very simply written and are certainly well suited to their purpose. Each is illustrated by many line drawings.

Two New Dinky Toys

A Heavy Tractor in the Supertoys Series



B.E.V. Electric Truck, Dinky Toys No. 14a.

THE B.E.V. Electric Truck, No. 14a, which was illustrated on the inside cover page of last month's "M.M.," is an addition to the Dinky Toys series that undoubtedly will give delight to thousands of enthusiasts. Trucks of this kind are coming into use on an ever-increasing scale for a variety of purposes in such places as works, warehouses, docks and railway yards. They are battery driven, with batteries that can be charged overnight to ensure that the trucks are available for a full day's work every day. Control is simple, and the trucks have the great advantage of handiness, as they can turn sharp corners and move about easily in confined spaces because of their small turning radius. They are made in all sizes, from small 10 cwt. models to large ones capable of carrying 3 tons.

The Dinky Toys model is a lifelike reproduction of the B.E.V. platform truck in which every important external feature is clearly displayed. There is a wide platform of ample length, providing the maximum space for a load; underneath is a representation of the battery box; and at the front is the driver's platform, where the driver himself has one foot on the brake pedal and controls the power and steering by means of the levers provided. The driver is pressing on the brake pedal because the brake is applied by a spring when he lifts his foot, so that when the truck is standing the brakes are on. They are not released until the pedal is pressed down, and electrical interlocks ensure that the power cannot be applied until this is done.

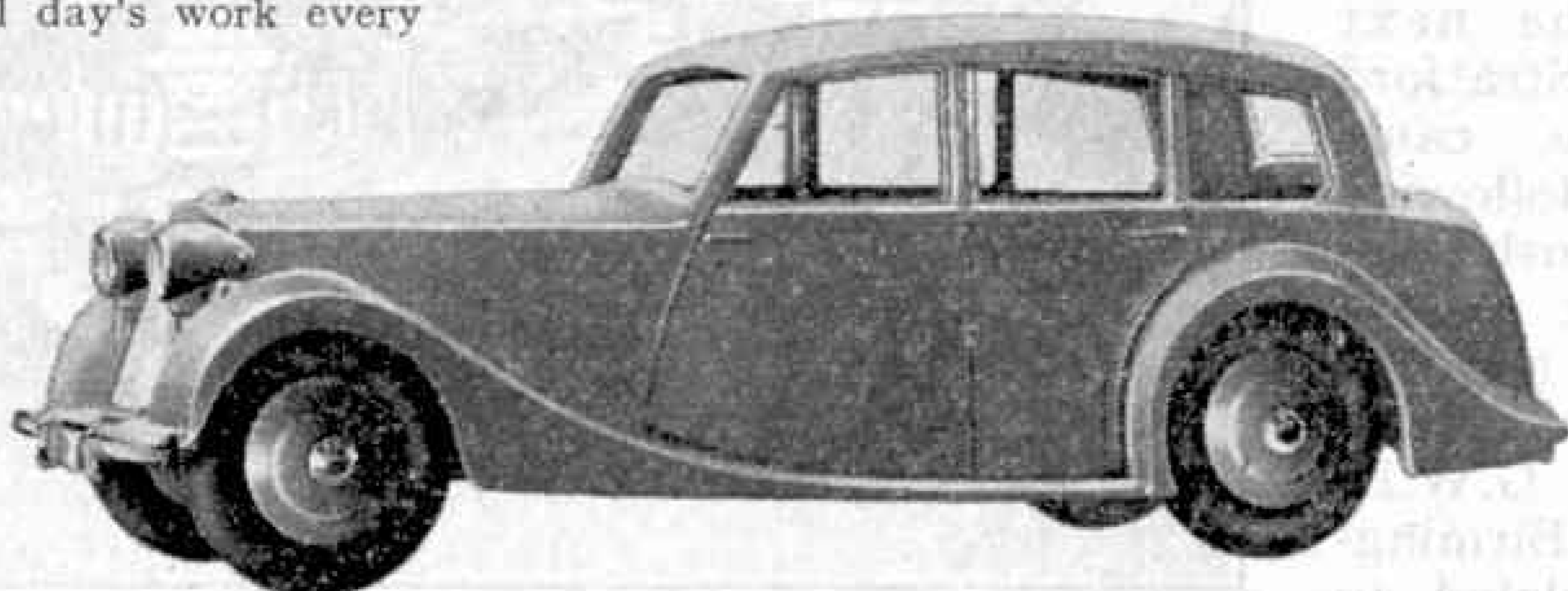
One of the first of British cars produced since the end of the war was the Triumph "1800," a fine modern example of British motor engineering, with independent front wheel suspension, a tubular chassis frame and a gear lever mounted on the steering column below the wheel. The bodywork is no less outstanding. Of the two models produced, a roadster and a "knife edge"

saloon, it is the latter that is the prototype of the latest addition to the motor cars of the Dinky Toys series, No. 40b. The handsome appearance of the real car is beautifully reproduced in the model, which is a fine example of modern styling. An interesting feature, reproduced in the miniature, is the great width of the body at the front seat, which in the real car is wide enough to seat two passengers alongside the driver. This can be arranged without difficulty, as there are no controls to get in the way of the occupants of the seat; the hand brake is applied by a pistol-grip lever under the dash.

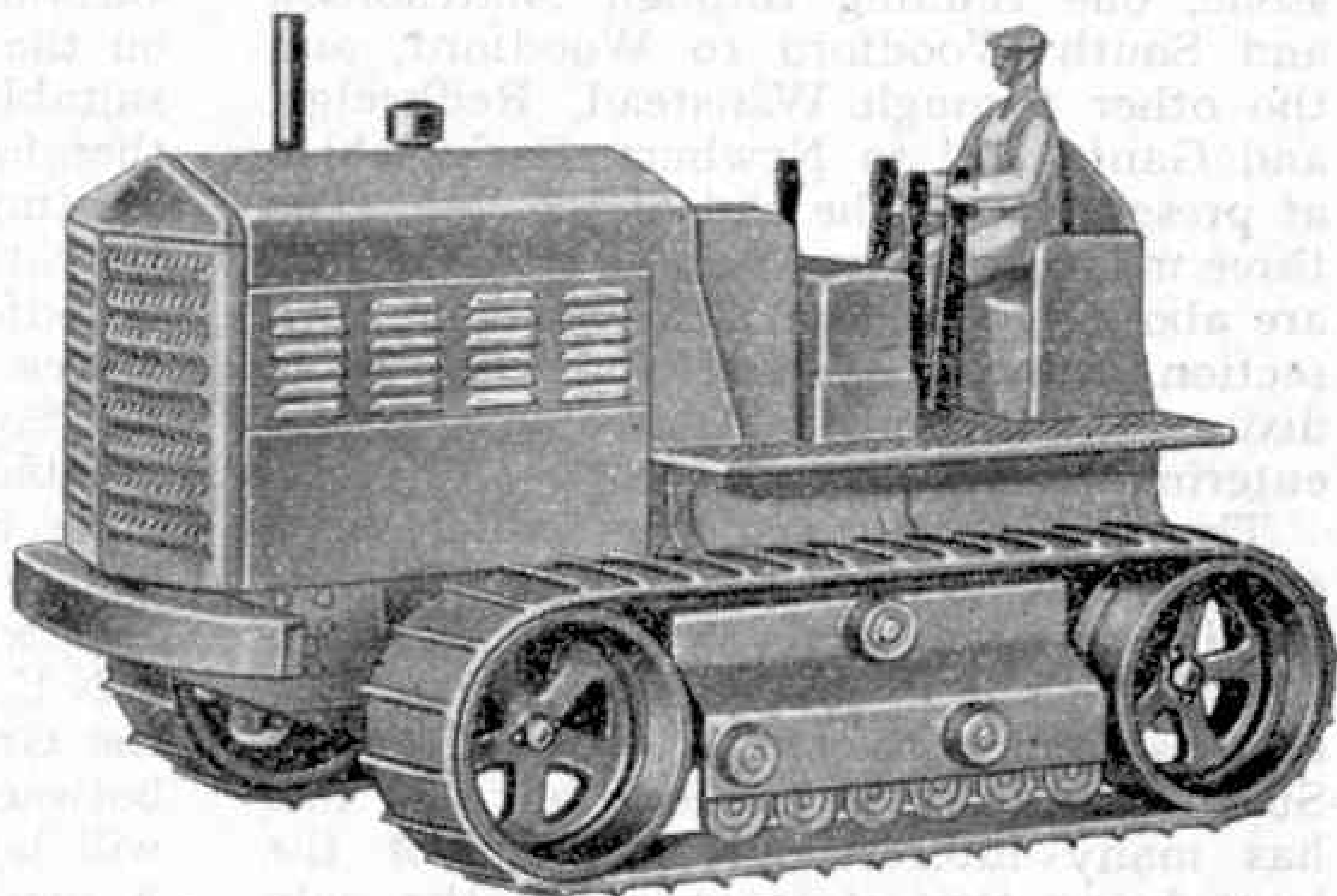
The third new product illustrated on this page is the Heavy Tractor, Dinky Supertoys No. 563. Real heavy tractors are designed for hard work, often on rough or muddy ground on which their creeper tracks give the necessary grip. They are largely used for haulage in excavation work, or when land is being cleared, as well as in large scale mechanised farming. The Dinky Supertoys miniature is a very imposing model, with a large bonnet that suggests a powerful engine, and here again a miniature driver is in position, with his control levers in front of him. There is no steering wheel, for the model is duly provided with creeper tracks, and steering is effected by speeding up or slowing down one or other of these, just as was done with tanks during

the war. The creeper track system of this impressive model consists of rubber bands, with which realistic movement is attained. The bands rotate freely and grip practically all types of surface well with only the weight of the model to give the necessary adhesion, so that the

Tractor can readily be manoeuvred. A great advantage is that they do not scratch polished surfaces or otherwise damage them.



Triumph "1800" Saloon, Dinky Toys No. 40b.



Heavy Tractor, Dinky Supertoys No. 563.

London Central Line Extension

A War Factory in a Tube

By T. R. Robinson

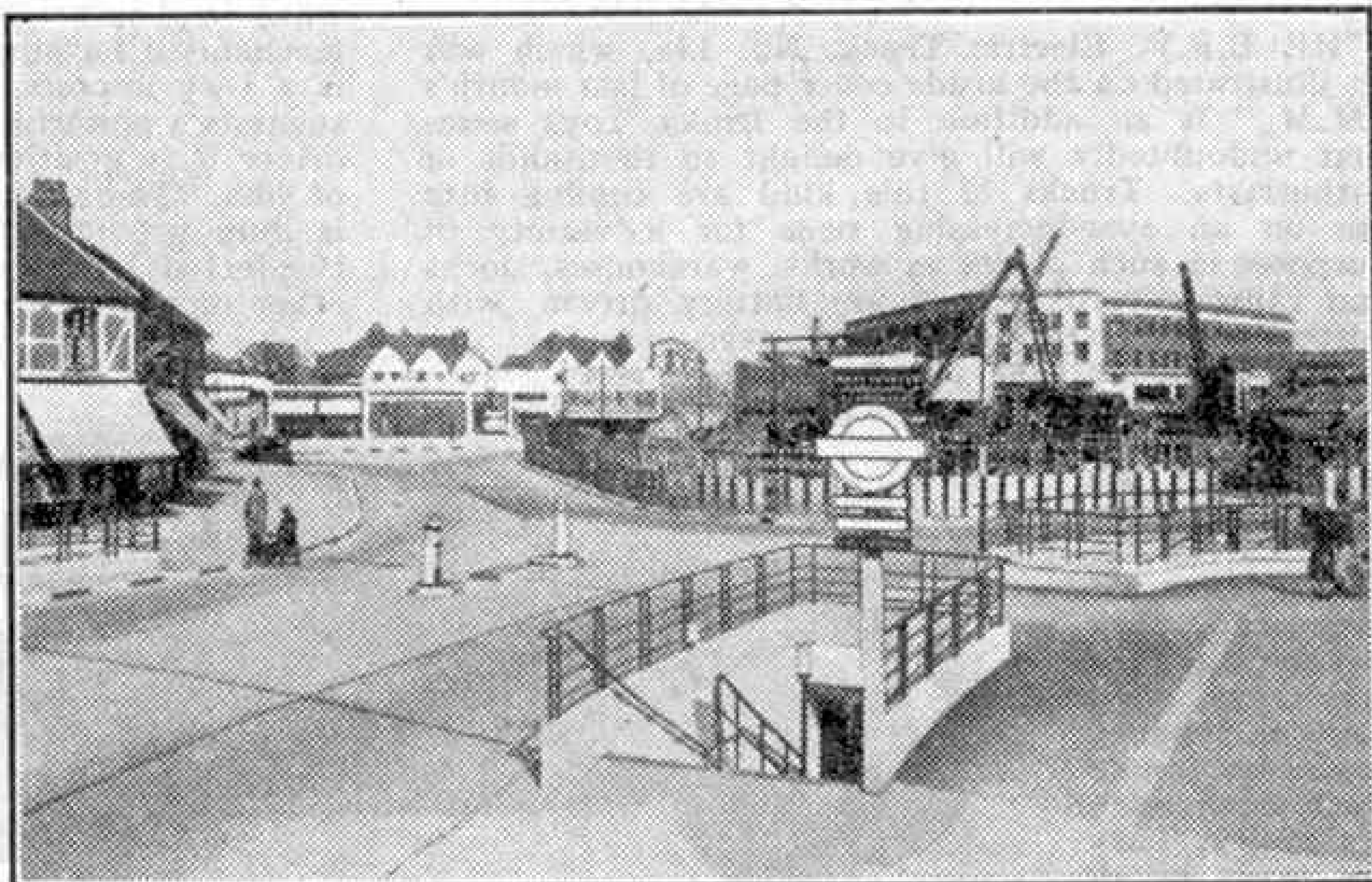
THE transport problems of many thousands of Londoners who live in the north-eastern suburbs were brought one step nearer solution on 14th December 1947, when the Central Line was extended to Woodford and Newbury Park, and seven more stations were made available to the travelling public. The opening of these lines completes one more stage of the scheme designed to relieve traffic congestion in the north-eastern area, which is now making steady progress. The first part of the extension was brought into use when, on 4th December, 1946, the new tunnels from Liverpool Street to Stratford were opened by the Minister of Transport. The next section, from Stratford to Leytonstone, came into use the following May, and a month later to balance the eastern extensions, an addition westward running parallel to the G.W.R. main line to Birmingham was completed to serve those living in Perivale and Greenford.

The latest extension is made up of two lines, which divide just beyond Leytonstone, one running through Snaresbrook and South Woodford to Woodford, and the other through Wanstead, Redbridge, and Gants Hill to Newbury Park, which at present forms the end of the line. The three miles from Leytonstone to Woodford are above ground, but the Newbury Park section runs in tunnel for the whole distance, and only emerges just before entering the station.

The engineering problems which were encountered during the construction of the line between Leytonstone and Newbury Park were not by any means so exacting as those met with in the initial Liverpool Street to Stratford section, but the line has many interesting features, not the least being that it is probably the only railway line in the world that was first

used as a factory! Another peculiarity is the wide variations in depth along the length of the line. These are so great that while at Wanstead entrance to the platforms is by escalators of considerable length, the next station, Redbridge, is so near to the surface that only short flights of stairs are needed to link the platforms and the roadway outside.

Leytonstone Station is at surface level, for it is a former L.N.E.R. station on the



The entrance to Gants Hill station under construction. The illustrations to this article are reproduced by courtesy of the London Transport Executive.

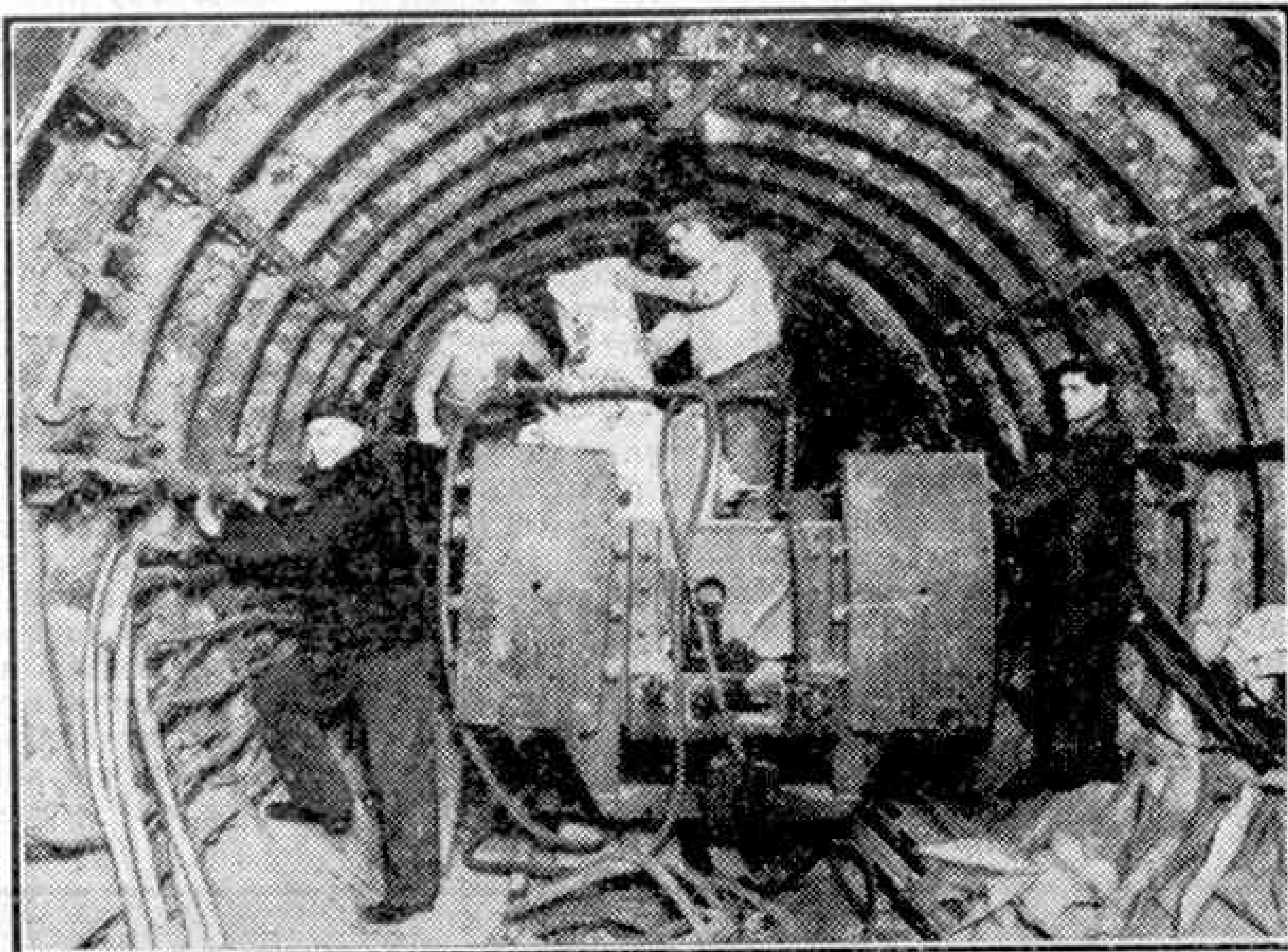
line to Epping and Ongar, and Snaresbrook. South Woodford and Woodford stations are also former L.N.E.R. stations on the same branch. In making this line suitable for Central Line trains, it was, therefore, only necessary to electrify the existing tracks and to make various small alterations to the station buildings. At Woodford and Snaresbrook new ticket offices and entrances were constructed, but South Woodford needed slightly more modifications to fit the station for the more intensive service with which it now has to deal.

Newbury Park, too, was formerly an L.N.E.R. station, and was the last on the Grange Hill Loop Line, whose tracks between Woodford and Newbury Park will later also carry Central Line trains. A new ticket office has been constructed at Newbury Park, and there is also an

omnibus forecourt which will give easy interchange between rail and road transport for passengers who live at a distance from the station. Another addition at this point is the car sidings, which will accommodate some of the trains not required at off-peak hours, for when the whole extension is complete half the trains from Central London will terminate their journeys at this station.

Further car sidings have been provided near the station at Woodford, and when the scheme is complete, there will be still more sidings at Loughton, as well as a depot at Hainault. By distributing the stabling accommodation for the trains in this way, the best possible services for those travelling on the extensions is assured, with a negligible amount of empty train mileage.

Work on the tunnels between Leytonstone and Gants Hill, on the Newbury Park Line, was begun before the outbreak of war, and their construction had advanced considerably by September 1939. There were no particular engineering difficulties between Leytonstone and Wanstead, for the tunnels were driven through firm soil at a considerable depth, but the acute shortage of iron and steel, caused by the large rearmament programme then in hand, made it impossible to line the tunnels with the usual cast iron segments,

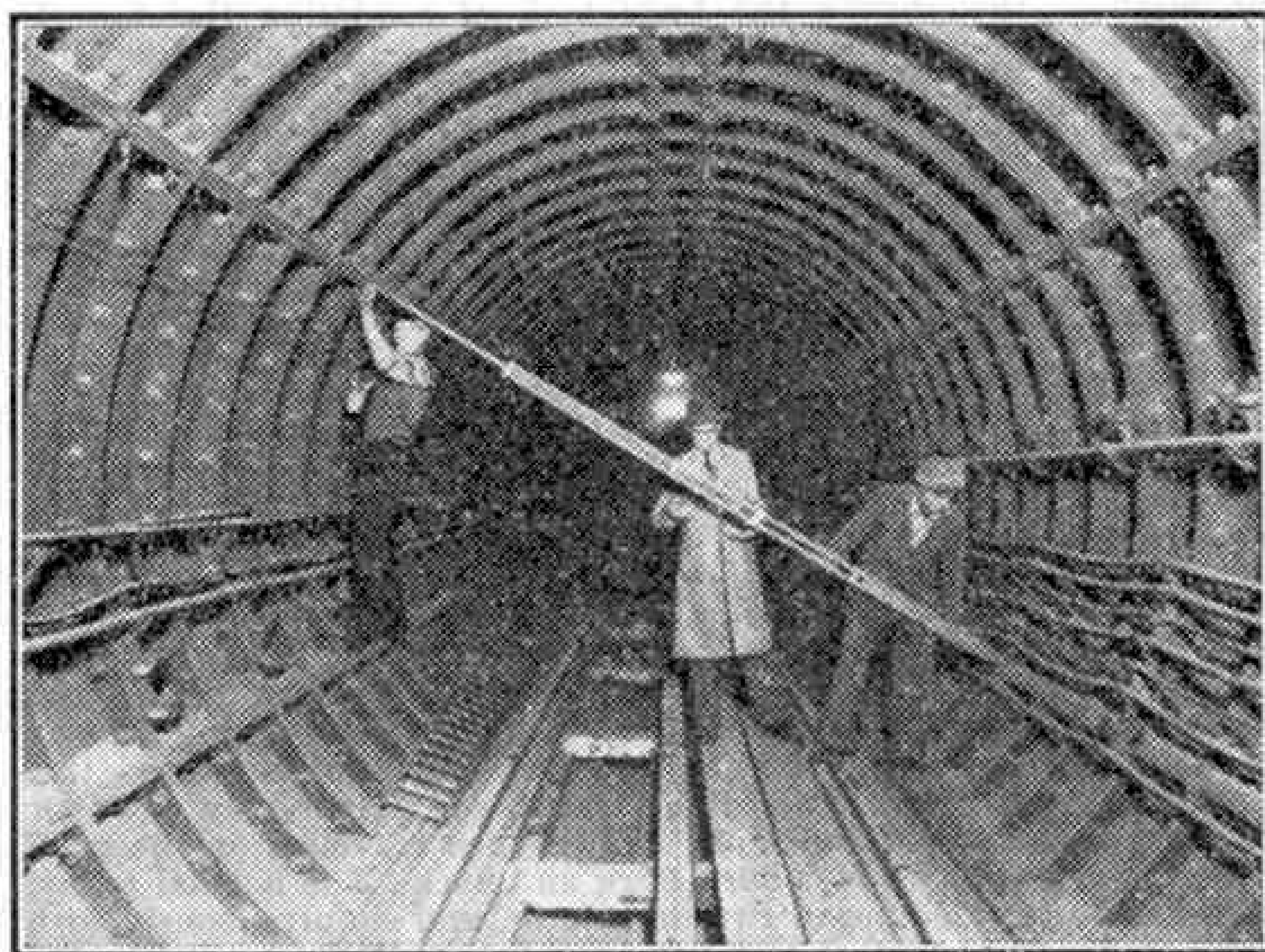


Forcing liquid cement between the tunnel lining and the surrounding soil.

and a substitute had to be found if the work was to proceed. After many experiments, a type of segment made up of reinforced concrete was proved to be satisfactory, and was adopted. It was the first time that a concrete segment had been used for tunnel construction, but this was quite strong enough to withstand all normal lateral stresses. A certain amount of special reinforcement was necessary, however, to enable the concrete to stand up to the thrust of the shield rams used in driving the tunnel forward.

Beyond Wanstead Station, the tunnels are very near to ground level and are under the water-bearing soil of the River Roding valley. Work here had to be undertaken in compressed air and cast iron segments were used. The Tube is at its shallowest at this point, and is so close to the surface at Redbridge that escalators are not needed. For a distance of some 200 yds. tunnelling was abandoned, and the cut-and-cover method was used, the line being excavated as an open trench or cutting, and afterwards roofed over. From Redbridge to Gants Hill the line is again at a fair depth, though the escalators at the latter station are not quite so long as those at Wanstead.

The station at Gants Hill, the key point of the new line, is of very remarkable construction. Because of its situation and importance, it was selected to be the first example of an



Gauging an existing part of the tunnel in preparation for re-alignment to cater for larger cars and greater speeds.

entirely new design. The actual site is beneath a large roundabout, where Clarence Avenue, Woodford Avenue, and Cranbrook Road all intersect with Eastern Avenue, the main trunk road from London to Southend, and the station has been planned to deal with the great numbers of passengers that flow to it from the large residential areas adjoining all these roads. In place of the small landing at the foot of the escalators that is usually to be found in Tube stations, a great underground concourse has been excavated at a depth of 40 ft. below surface level. This is 50 yds. in length and its domed roof, 20 ft. above the footway level, is supported by 16 tiled columns. The passengers pass between these columns to reach the trains, and there are no platforms in the old sense, for the great hall forms the escalator landing and the two platforms combined.

The difficulty of excavating so large a space underground was overcome by driving a number of small tunnels, and then dismantling all but the outside linings, which now form the walls and roof of the station hall. The completed structure is the largest deep level excavation of its kind in Britain, and there is no other station on the Underground Railway

work was that due to the temporary use of the line as a factory during the war. The story of this transformation is one of the most interesting in all railway history, for, in the factory, 5 miles long, that was housed in the tunnels between Leytonstone and Gants Hill, thousands of components and pieces of equipment for the various Services were made.

It was when the enemy air attacks on London became severe in 1940 that the Ministry of Aircraft Production suggested that the completed sections of the tunnels should be used to give protection to the workers and machines, which were producing equipment urgently needed for the armed forces. London Transport readily co-operated, and the strange task of making a railway into a factory began. The job was not without its problems, for a 12-foot tunnel was by no means the ideal site for some kinds of machine tools and workshop appliances. In addition, the entry and exit of the workers, the transport of raw materials and finished parts, and the provision of canteens, mess rooms, first aid rooms and similar things required a great deal of planning and contriving.

Additional shafts were sunk at two places to give improved access, and lifts were installed. By this

means, no worker had to walk more than 400 yds. to reach his or her machine.

A light tramway ran through the tunnels to carry materials and finished parts, and special air-conditioning and lighting equipment were put in. At the three stations, the escalators served to carry the workers to and from their work, and some special tackle was put in to enable heavy materials to be handled with a minimum of difficulty.

By March 1942 the factory was ready for work, and the Plessey Co. Ltd., who were manufacturing aircraft and other Service apparatus, used it until 1945, turning out large numbers of wiring sets for "Lancaster" and "Halifax" bombers, cartridge starters for fighter planes, field telephones, wireless sets,

shell fuses, and many other items. At the end of hostilities the Plessey Co. removed their plant, and then began the huge task of rendering the tunnels free for their original purpose. In completing this job, more than 12,000 tons of concrete and equipment had to be cleared away. The thick reinforced concrete flooring, which had supported the machine-tools and similar things, had to be drilled out, bit-by-bit, and then broken up and carted away. With all the factory equipment cleared, tracklaying could be proceeded with, and now trains speed along where lathes, millers, drills, and automatics toiled to assist in the defeat of Hitler. It must be a strange experience for passengers who were formerly at work in this unusual factory to travel through the tunnels they knew so well in those wartime days!

The extension was formally opened by Mr. Alfred Barnes, the Minister of Transport, on 12th December 1947 in a rather novel way. A golden gate 11 ft. in width, inscribed: "*London Transport at London's Service*," spanned the eastbound platform at the new Wanstead Station, and by inserting a golden key into a lock on the gatepost, Mr. Barnes caused this to swing clear of the track, leaving the way clear for the first train. Mr. Barnes then travelled on the train as far as Newbury Park and back. The normal public service began two days later, and simultaneously with the start of the extended lines, all the trains on the Central Line were lengthened to seven cars, with a number of eight-car

(Continued on page 287)



The east-bound platform of Wanstead Station, showing its fluorescent lighting.

which resembles it, though it may well prove a model for future construction.

The ticket hall at Gants Hill lies directly underneath the roundabout, and is connected to the roadways above by staircases of a similar type to those at Piccadilly Circus. There are 10 main entrances to the station, and, in addition to giving access to the Tube lines, these will provide a public subway at the roundabout, and so enable pedestrians to cross safely at this busy traffic point. The facings and finish of the ticket hall and concourse give a very neat and attractive appearance, and the illumination is by bands of fluorescent lighting, which gives a smooth even effect and avoids eye-strain. Similar illumination also has been installed at Wanstead and Redbridge stations, and the colour scheme of each station is different, the idea being to enable travellers to see at a glance just where they are by a mere glimpse of the colours on the station walls!

The engineering work on the Leytonstone-Newbury Park section embodies all the detail improvements employed on the Liverpool Street-Stratford section. Rail lengths of 300 ft. reduce the noise due to the contact between wheels and joints, and the tunnels are fitted with special sound-proofing material throughout their entire length. In all other ways the line represents the very latest practice, particularly in such details as signalling, points operation and the layout and equipment of car sidings.

Perhaps the most novel part of the engineering

Air News

By John W. R. Taylor

B.O.A.C. Charter "Skymasters"

B.O.A.C. have made arrangements to charter a number of "Skymaster" aircraft from Skyways Ltd., to carry traffic for Middle East oil companies to and from points on their scheduled routes in Syria and the Persian Gulf. Owing to the specialised nature of this work, it would be uneconomical to carry such traffic in the type of aircraft available in the present B.O.A.C. fleet, and the new arrangement ensures that most of the oil companies' traffic will be carried in British-owned aircraft, while at the same time reducing considerably B.O.A.C.'s operating costs.

American Jet Trainers

Two new trainer versions of the Lockheed "Shooting Star" are in production in America, one for the U.S. Navy and the other for the U.S.A.F. First is the "Shooting Star" T0-1, for which the U.S. Navy Bureau of Aeronautics has placed a \$5,000,000 order with Lockheeds. This machine is identical with the latest fighter version being delivered to the U.S.A.F., and will be used for training naval pilots in jet combat tactics.

The other new trainer is the TF-80C "Shooting Star," which is being built for the U.S.A.F. This is a two-seat version, like the British Gloster "Meteor" 7 illustrated on this page, and can be used for complete dual instruction in flying and fighting in jet aircraft. It normally carries two .50 in. machine-guns in its nose, but four more can be fitted if required, to give the TF-80C the same fire-power as a F-80 "Shooting Star" fighter.

Scottish Air Ambulance Service

The demand for the Air Ambulance service in Scotland has increased so much that B.E.A. are forming a new ambulance flight capable of serving the remoter islands and highlands. It will be equipped with three de Havilland 89 "Rapide" aircraft, and will be under the command of Captain D. Barclay, who was awarded the M.B.E. for his services to Scottish aviation during the war.

The present B.E.A. Air Ambulance service covers all areas served by scheduled flights as well as South Harris, North Uist and Oban. Between April 1947 and March 1948 it completed 182 ambulance missions, 169 of which originated from Renfrew Airport and collected patients from the West coast of Scotland and the Hebrides. The remaining 13 were flown from Inverness to places in the north-east, Orkneys and Shetlands.

All-Weather Test Hangar

A "climatic hangar" in which practically every weather condition known can be simulated is now in operation at the U.S.A.F.'s experimental station, Elgin Field, Florida. It includes an all-weather room, a stratochamber, hot and cold test rooms, engine test room and tropic marine rooms, and has a temperature range from minus 70 to plus 165 deg. F. An exhaust system permits engine running with the hangar doors closed, and ground personnel can walk about in a snowstorm or fog inside the hangar while their colleagues outside service Elgin's other test aircraft in brilliant sunshine.

The new hangar is large enough to accommodate



The new Gloster "Meteor" 7 Trainer in company with a "Meteor" 4 fighter aircraft. Photograph by Cyril R. Peckham.

at the same time a "Superfortress," "Twin Mustang," "Shooting Star," "Invader" and several other military types, and has been built as a major part of the U.S.A.F.'s climatic-testing programme designed to ensure that new aircraft and aircraft maintenance equipment can be used under all weather conditions.

Pan American Test Radar "Eyes"

Despite the densest fog or blackest night, pilots of Pan American Airways' all-cargo "Skymaster" "Clipper Gladiator" when flying the Atlantic can "see" the surface of the water below or the area ahead for some 40 miles. Their "eyes" are the delicate mechanism of an airborne radar unit, the antenna for which is contained in a plastic radome replacing the regular nose of the machine. A silhouette of the objects viewed is projected on a screen in the cockpit; outlines of the topography are seen clearly; and even cloud formations show up on the screen, enabling the pilot to detour around them and avoid rough air conditions through which he would otherwise fly.

The equipment will receive a thorough testing on "Clipper Gladiator," as this aircraft operates over the notoriously stormy Atlantic and over the Continent to Germany. If the results are as good as they promise to be, this form of radar will be combined with radar Ground-Controlled Approach installations to improve still further the safety of air travel.

B.O.A.C.'s Empire Freight Services

The all-cargo air service to Australia started by B.O.A.C. last December has proved so popular that it has been supplemented by a similar service to South Africa. Altogether 11 of B.O.A.C.'s fleet of 14 "Lancastrians" have been stripped of their passenger seats and bunks to operate the two routes, their 4-ton freight capacity being invaluable to British exporters who wish to get their products overseas quickly.

The new *Springbok* freighter service to Johannesburg covers 6,850 miles, stops being made at Tripoli, Cairo, Khartoum, Nairobi and Salisbury, as necessary.

The Northrop "Raider"

The U.S.A.F. has awarded the Northrop Aircraft Company a \$5,500,000 contract for 23 military versions of their "Pioneer" transport aeroplane. The new aircraft will be known as Northrop C-125 "Raiders" and, like the "Pioneer," will be three-engined, fixed undercarriage machines able to operate with heavy loads from small, unprepared airfields.

A Highway Over the Sea

By Harold J. Shepstone, F.R.G.S.

ONE of the most novel and interesting roadways in the world is that known as the Overseas Highway which runs from the popular pleasure resort of Miami on the Florida coast, down through the Everglades, to the southernmost tip of Florida. From this point there stretches out into the ocean for more than 100 miles a chain of coral islands locally known as keys; and the road crosses 28 of these islands, which have been connected by embankments and bridges.

The roadway originated in a daringly conceived railway. It was a difficult task to lay the track through the Everglades, which may be likened to a large shallow lake enclosing thousands of islets covered with dense thickets. These

camps on the islands, where the men lived, were blown down. But the engineers stuck to their job, and in 1912 the railway stood complete at a cost of £5,600,000.

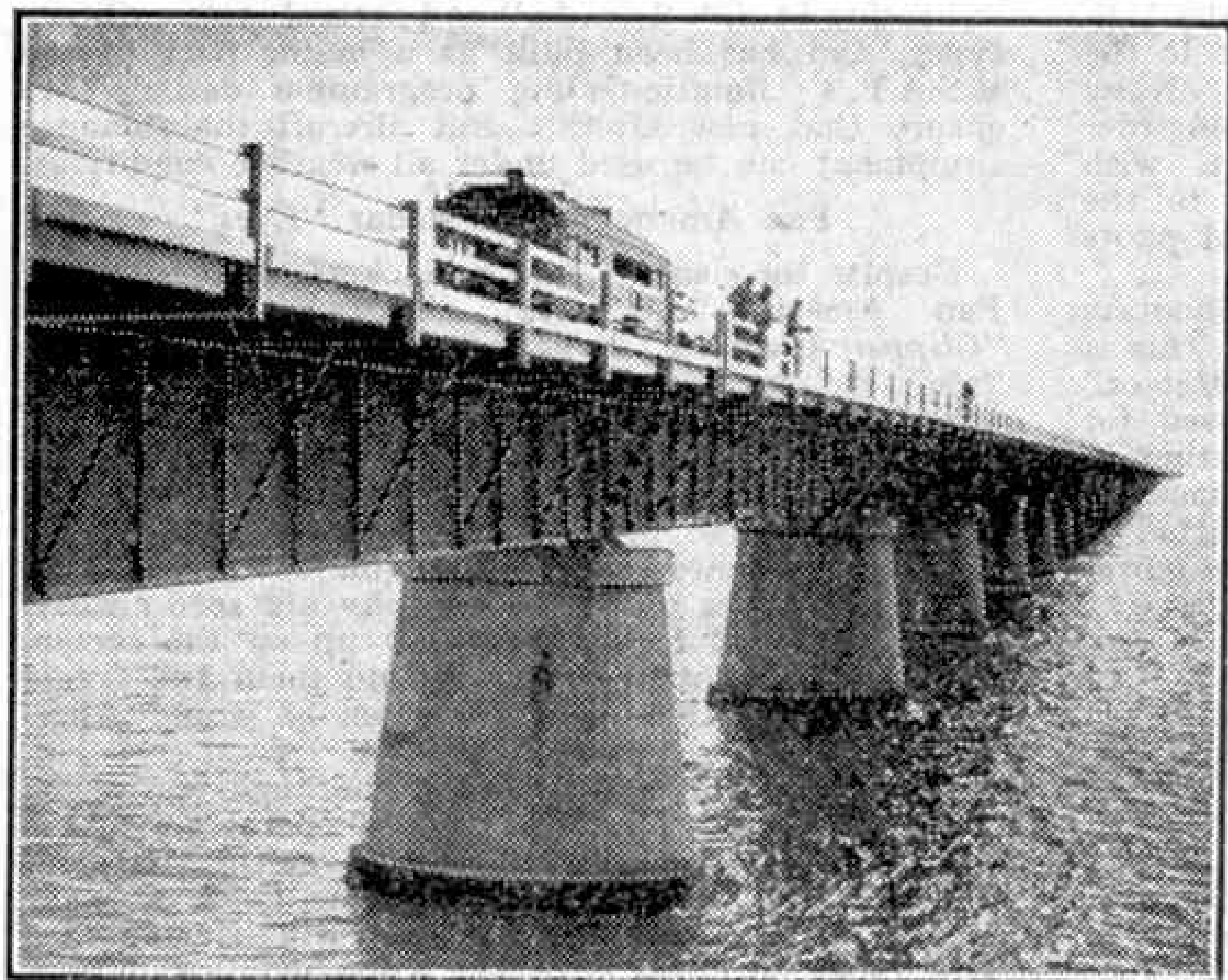
The cry now was for a roadway between Key West and the Florida mainland parallel with the railway track, and this was begun in 1922. Six years later the work was stopped through insufficient funds, but it was then complete with the exception of two water gaps across which vehicles were carried by ferries. This condition continued until 1935 when the railway was destroyed by a hurricane and abandoned.

The right-of-way and the existing bridges were later purchased for the sum of £128,000. The two water gaps, which

represented a break of some 40 miles, were successfully bridged by the Overseas Highway created by the Florida Legislative, and the road over the Keys was opened for traffic just before the war. During 1943-44 the State Road Department of Florida completed the present modern highway by overhauling the viaducts and replacing wooden bridges and other work by concrete and steel structures.

Such, briefly, is the story of the Overseas Highway, which may be said to represent some 40 years of endeavour on the part of able engineers, an expenditure of £10,000,000, and the sacrifice of over 1,000 lives. It is a State highway, open to anyone, and is free with the exception of some 40 miles

over the Keys where a toll is charged. It is a very popular resort of motorists, and at week-ends there is a stream of traffic across the highway. There is also a regular bus service between Miami and Key West, the most novel bus journey in the world. Leaving Miami, we strike south to Homestead. Here we plunge into the heart of the Everglades, a weird region of jungle, forest and swamps, to emerge, after a ride of some 20 miles, at Water's Edge, the southernmost tip of Florida. Crossing Jewfish Creek we are upon the first of the islands, Key Largo. It is the largest of the keys, some 16 miles in length. A mile or so out in the



One of the long viaducts on the Overseas Highway.

swarmed with ferocious alligators which gave the railway workers an anxious time.

The erection of the embankments and viaducts that carry the rails over the ocean necessitated the services of a fleet of miscellaneous and costly craft. The openings between the islands vary in width from a few hundred yards to several miles, with a depth of water from a few feet to over 90 ft. In smooth weather the work was difficult enough, but the Gulf is subject to sudden storms. Then vessels broke loose from their moorings and the men upon them were only rescued with great difficulty. Boats with heavy and valuable machinery turned turtle, while



Memorial at Islamorada on Upper Matecumbe Island, dedicated to the 800 victims of the hurricane of 1935.

Gulf is Rock Harbour, a thriving little settlement of prosperous lime growers and fishermen. It is associated with the notorious Teach, better known as Blackbeard, the pirate, who was killed in these waters during a fight with a British warship.

At the farther end of Key Largo is Tavernier, one of the largest settlements on the keys, where guides and fishing boats may be hired. Plantation and Windley islands are crossed, and then comes Upper Matecumbe. At Islamorada, a prosperous settlement on the island, stands the Hurricane Memorial dedicated to the veterans of the first World War who lost their lives while working on the keys during the terrible hurricane of September 1935. A train sent to rescue the men was overwhelmed by a tidal wave, leaving only the locomotive on the rails. Wind and waves crushed the frail wooden shacks of the workers, many of whom tied themselves to boats at anchor in an effort to survive. Miles of the railway track was washed away and entire settlements

were obliterated. More than 500 bodies were recovered after the storm subsided, and for months unidentified bodies were found in the mangrove swamps. The number of victims was estimated at 800. Beneath the memorial is a crypt where many of the bodies were interred. Carved in the shaft of the monument is a symbolic representation of the hurricane, depicting the palms bent by the force of the wind and waves.

Crossing the bridge to Lower Matecumbe we detect out in the Atlantic two small islands, Teatable and Indian Key. A company of soldiers were encamped on the former in 1840 when there was a general uprising of the Indians. The soldiers were not informed in time to get away to Indian Key, and were all killed. On Lower Matecumbe is the toll station for traffic going to Key West.

The bridge across Channel Five to Long Key was a notable piece of engineering. A truss bridge, just wide enough for a single track railway, was split in two lengthwise and widened to take the highway, which is 20 ft. wide.

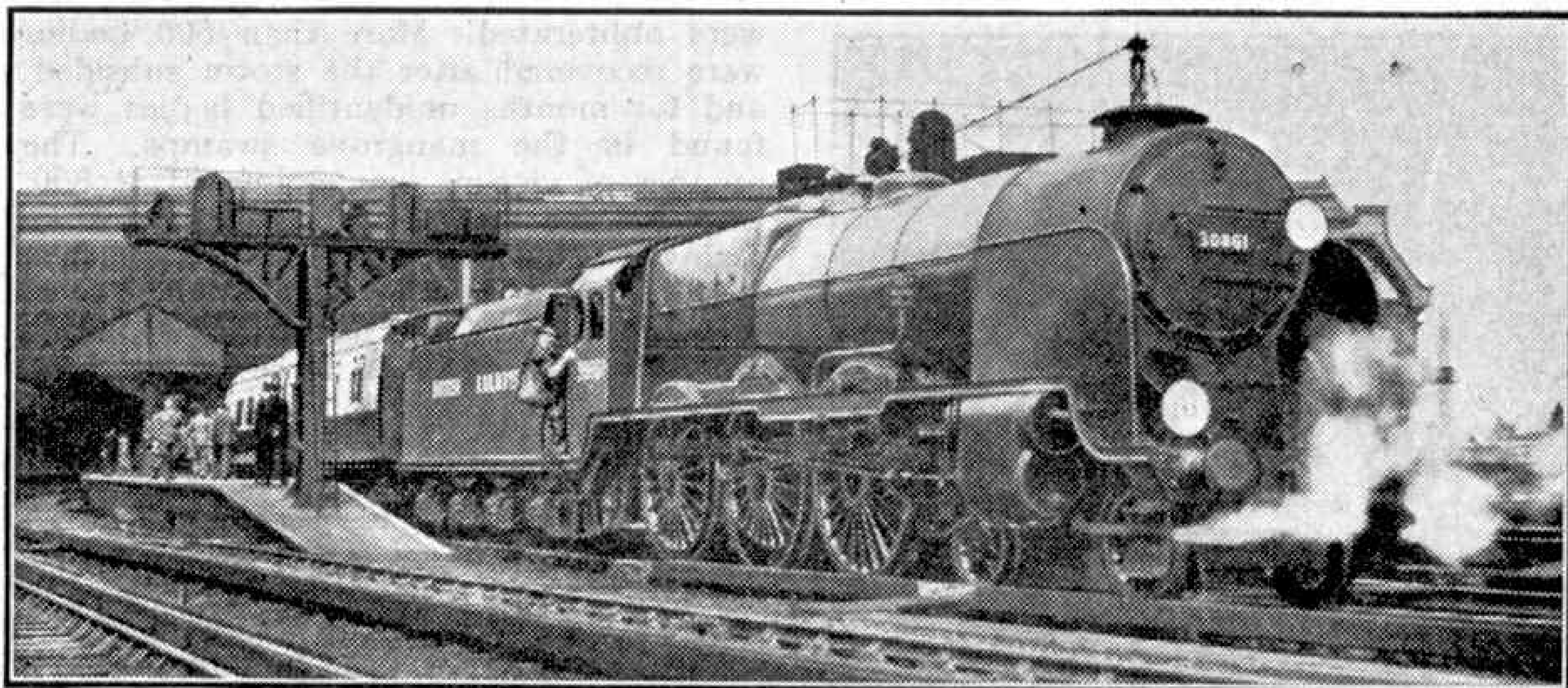
Another long viaduct and Grassy Key is reached. For years there were rumours that pirates buried treasure here, and in 1911 61 gold pieces were unearthed in a goatskin bag.

We are now in the very heart of the Keys where islands are small and the bridges long. Between Marathon and Bahia Honda is the longest of these viaducts, seven miles in all. A spectacular feature of its reconstruction was the building of the highway over the top of the railway bridge, transforming it from a bridge truss to a deck truss bridge.

Once over the bridge, islands come in quick succession and soon Key West, America's great Naval base and southernmost city, is reached. The journey by bus from Miami takes 4½ hours.



Filling station and inn on the Overseas Highway.



Southern 4-6-0 "Lord Anson" at Waterloo. Engine and train, a Bournemouth express, are in experimental liveries. Photograph by C. R. L. Coles.

Railway Notes

By R. A. H. Weight

National News

British Railways have authorised a programme for renewal of permanent way to the extent of 1,226 miles complete renewal, with a partial renewal of a further 550 miles. Track will be pre-fabricated and assembled beforehand in 60 ft. lengths ready for conveyance to the site. There, whenever possible, cranes will be used for lifting sections of old and new track on or off wagons. A "Matisa" automatic ballast cleaning machine is being tried on various sections of line. It removes, cleans and replaces ballast as it moves along the track under its own diesel-electric power. Tamping machines are also used in order to harden and settle the ballast as quickly as possible, thus enabling fast running to be more quickly restored.

A new type of small refreshment trolley being introduced is only 9½ in. wide and can be wheeled along train corridors and through vestibules between the coaches. It provides for the service of snacks or beverages to passengers in compartments on long-distance trains.

An interesting rolling stock exhibition was held in May last at Leith Central Station, which demonstrated the combined operations now featured in the Scottish Region. An L.M.R. Class "5" mixed traffic locomotive was shown, together with a "B1" 4-6-0 of the former L.N.E.R., each being named and renumbered. There were also L.N.E.R. type "Pacific" engines, "Cock o' the North" and the royal-blue painted "Captain Cuttle." Restaurant cars with other passenger vehicles were on view, also specially fitted freight vans, road vehicles and a mobile signalling school. As we go to press we learn that a rolling stock exhibition was being held at Doncaster in the middle of July.

London Midland Region

New class "5" 4-6-0 built at Crewe, No. 44755, with roller bearings and Caprotti valve gear, is shedded at 17A, Derby. Engines of this batch stationed at Longsight have been working between Manchester and Birmingham. New 4-6-2 No. 46257 "City of Salford" is at 1B, Camden. Further new class "4" 2-6-0 freight engines are Nos. 43014-5 at 19A, Sheffield; Nos. 43016-7 20A, Leeds; and

No. 43018, 16A, Nottingham. We are informed that the last of these has been on trial runs from the neighbouring Eastern Region Colwick (Nottingham) shed, and that No. 3011 has been on loan to Stratford, Eastern Region. The latest reported "4P" 2-6-4Ts constructed at Derby are numbered and allocated as follows: Nos. 42147-8, 24F, Fleetwood; and Nos. 42149-53, 25E, Sowerby Bridge. Two new diesel-electric shunting 0-6-0s are Nos. 12045-6 at 18A, Toton.

The first two of the famous Midland Compound 4-4-0s to be withdrawn are Nos. 1002, 1029. Another of the early series has lately left Works renumbered 41037.

Just over 35 years ago the present writer made his first long run behind a "George the Fifth" L.N.W.R. 4-4-0, other new engines of the type being seen during the journey. To-day this once-famous class is extinct, No. 25373 "Ptarmigan," illustrated on page 271, having been added to the withdrawn list, together with No. 25350.

We understand that the present locomotive building programme follows recent L.M.S. policy, as construction is to be continued of "4P" 2-6-4 and "2P" 2-6-2T engines, with more "4F" 2-6-0s, class "5" 4-6-0s and diesel-electric shunters. Most of the through main line trains between St. Pancras and Manchester or Leeds are worked by the same engine throughout. The West of England expresses similarly have one engine through between Bristol and Sheffield or York.

"Jubilee" 3-cyl. 4-6-0s are prominent on the Midland Division. Some of them are painted green, as are certain "Royal Scot" and "Patriot" 4-6-0s. Six "7P" 4-6-2s are adorned in royal blue for working the experimentally painted "Royal Scot" and other two-colour fast trains. Some class "5" 4-6-0 mixed traffic locomotives are black, lined red, cream and grey.

Western Regional News

The new "Castle" class engines are coming into service, beginning with No. 7008 "Swansea Castle," allocated to Oxford, which has not usually had any express engines more modern than "Stars" allocated to its shed hitherto. This was followed by No. 7009 "Athelney Castle," and 18 more are to be built. Some are being painted bright green in accordance with the national scheme for express locomotives, other than the most powerful, during the present experimental period. Certainly two "Kings" are blue, Nos. 6009 and 6026 having been reported so painted.

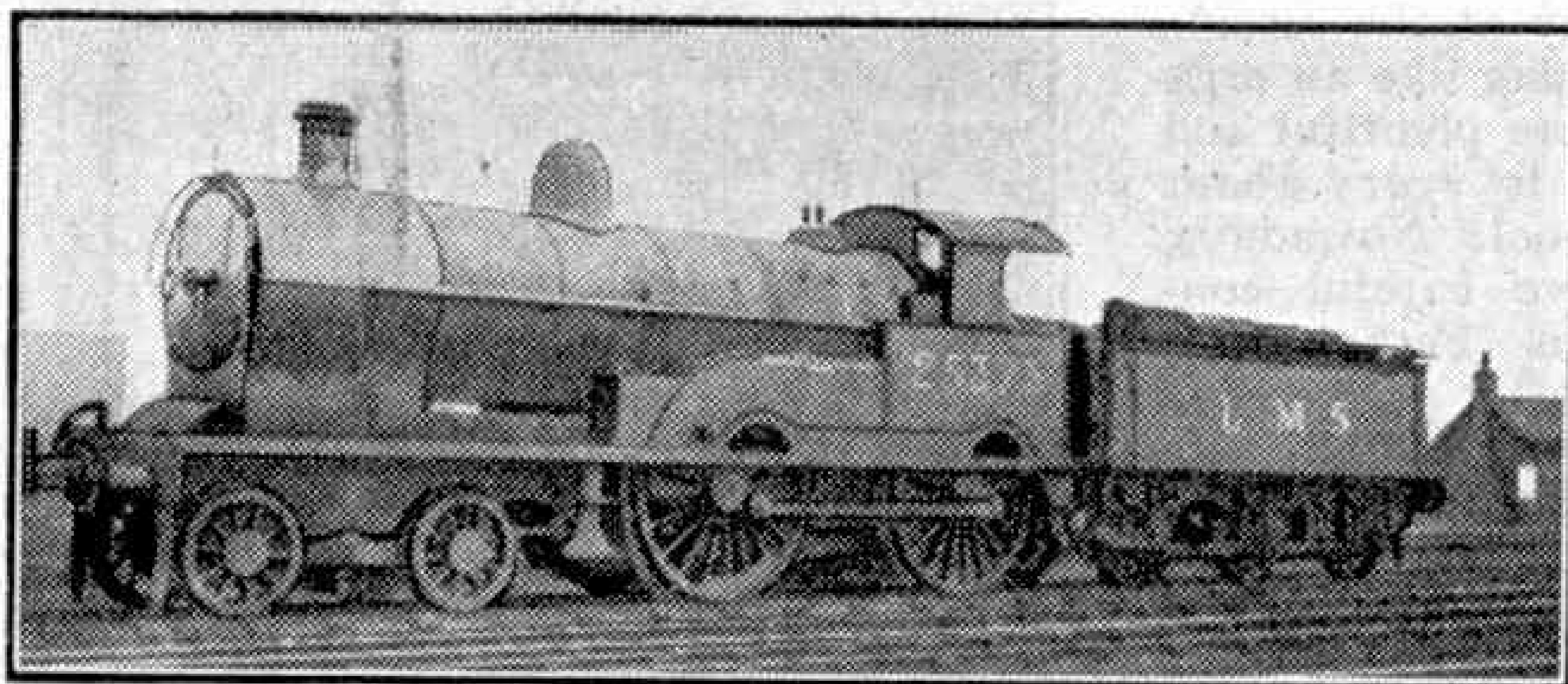
Further new 0-6-0T Nos. 9667-70 have been placed in service, together with 0-6-0 diesel-electric

shunting engines numbered 15103-4. Withdrawals include three "Saint" 2-cyl. 4-6-0s Nos. 2913 "Saint Andrew," 2980 "Coeur de Lion" and 2988 "Rob Roy," with 4-4-0 No. 3391 "Dominion of Canada" and the diminutive 2-4-0T, No. 1308 "Lady Margaret," which we described and illustrated not long ago. The subsidiary works at Wolverhampton, Worcester

an exhibition of prints, photographs and models depicting the life of the station during its various phases of the last 100 years was held. Alongside platform 15 there was displayed an Adams L.S.W.R. 4-4-0 No. 563, withdrawn from active service, with a passenger coach painted in the livery familiar at the beginning of the present century. There were also

"Boxhill," the yellow "Terrier" 0-6-0T, and one of the latest "West Country" class 4-6-2s.

Logs received indicate that the "H2" Brighton "Atlantics" still do good work with the London-Newhaven boat trains, loaded sometimes to about 380 tons full. With heavier trains exceeding 400 tons a "King Arthur" 4-6-0 is sometimes employed. For example, No. 794 "Sir Ector de Maris" had time well in hand for recovering from signal checks. These boat trains are the only regular steam expresses to traverse the greater part of the London-Brighton main line at present.



"Ptarmigan," now withdrawn, one of the last survivors of the "George the Fifth" class of the former L.N.W.R. Photograph by R. Turret.

and Newton Abbot are busy with repairs to the smaller types.

Third-class sleeping accommodation is now provided on the night services between Paddington and Penzance for the first time since 1939. First-class sleeping cars continue to run.

We have received details of a good run from Reading to Bristol by one of the new modified "Halls," No. 6990, "Witherslack Hall," which has since run on trial between Marylebone and Manchester, Eastern Region. With 445 tons (13 coaches full), the journey was made in 3½ min. under the booked time of 92 min. for 82½ miles. At Bath three coaches were slipped, reducing the load by nearly 100 tons; that city, 71 miles, was passed slowly in 74½ min., the maximum speed having been about 73 m.p.h. The final 11½ miles into Bristol from Bath were run easily in 14½ min.

Southern Tidings

New "Battle of Britain" 4-6-2s Nos. 34071-2, named respectively "615 Squadron" and "257 Squadron," are stationed at Dover for hauling the Ferry Train or other Continental specials. Nos. 34073-6 are going to Ramsgate as ready. "Merchant Navy" large 4-6-2s under construction will be numbered from 35021 up. There have been several changes in the shedding of the light "Pacifics" which are divided between Exmouth Junction, Plymouth, Salisbury, Nine Elms, Battersea (Stewarts Lane), Dover and Ramsgate depots. Seven of the ex-L.S.W.R. "T9" 4-4-0s are at Battersea shed for working on the Eastern Section as in pre-war years. The last active "saddleback" 0-6-0T of L.S.W.R. Beattie origin, which was fully 70 years old, has been withdrawn as Kent and East Sussex No. 4. Several "C" 0-6-0s are stationed at Guildford, while the new "Q1" engines are more prominent on the Eastern Division.

A fine new Continental Enquiry Office, dealing also with tickets and reservations, has been opened at Victoria Station. To celebrate the centenary of Waterloo station

Eastern and North Eastern Regions

New "L1" 2-6-4T Nos. 67719, 67721 are stationed at Hull (Botanic Gardens). Some of those stationed at Stratford have been working not only from Liverpool Street to Southend, but on occasion with fast trains as far as Cambridge or Ipswich. Further new "B1" 4-6-0s include Nos. 61319-22 at Borough Gardens, near Newcastle, and Nos. 61323-4 at Kittybrewster, Scotland. "A2" No. 60538 "Velocity" has been completed. Nos. 60533 and 60536, the latter named "Trimbush," are stationed at Leeds G.N. shed (Copley Hill) for Pullman and other express workings to Kings Cross. It is understood that "A3" and "A2/3" 4-6-2s are also being allocated to that depot. Straight from successful running on the L.M.R. between Euston and Carlisle, "A4" No. 60034 "Lord Faringdon" worked the first northbound non-stop "Flying Scotsman" from King's Cross on 31st May, continuing to operate many more journeys on that service during June and July.

It is understood that the first of the new "A1" 6 ft. 8 in. "Pacifics" will be ready by the time these lines appear in print, as No. 60114. "W1" 4-6-4 long familiar as "No. 10000" is renumbered 60700.



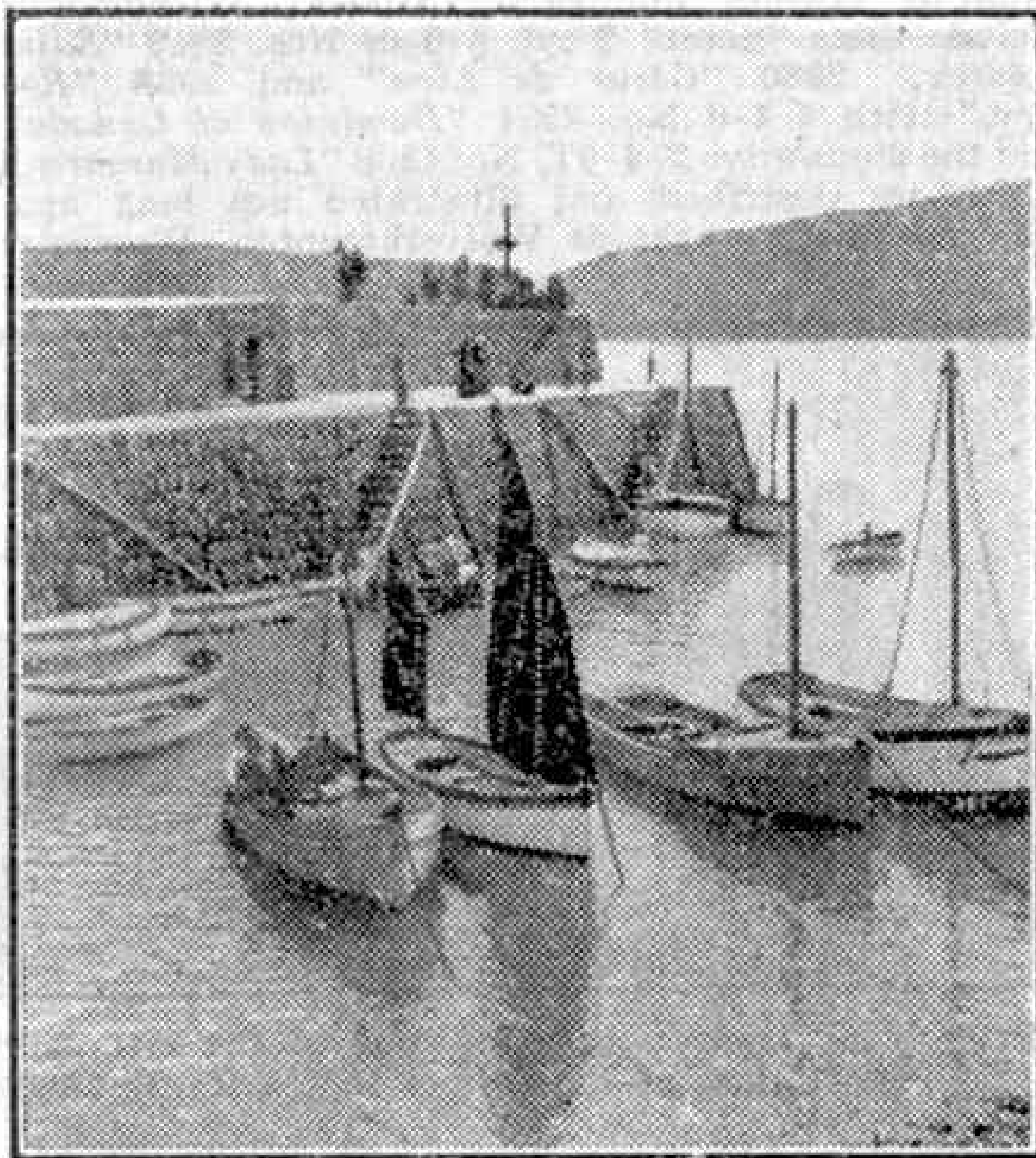
A Southern 4-6-2 on Western metals. "French Line C.G.T." approaching Westbourne Park with an up express. Photograph by F. R. Hebron.

Photography

At the Seaside

IN pre-war days a holiday at the seaside used to result in something like an orgy of snapshotting. Films were plentiful and cheap, and one never had to worry about where to get the next spool. Nowadays, however, one has to give careful consideration to every picture. Perhaps this is not really so bad for us after all, because it should result in a fairly good picture every time, which was certainly not the case when we pressed the button light-heartedly on all kinds of subjects and in all light conditions.

As regards exposure, seaside photography has the great advantage that the light is very strong. Failure therefore is usually due not to under-exposure but to a choice of unsuitable subjects. Whatever the



Clovelly Harbour, North Devon.

around for a day or two and make a note of likely scenes before actually starting to expose the few precious films available.

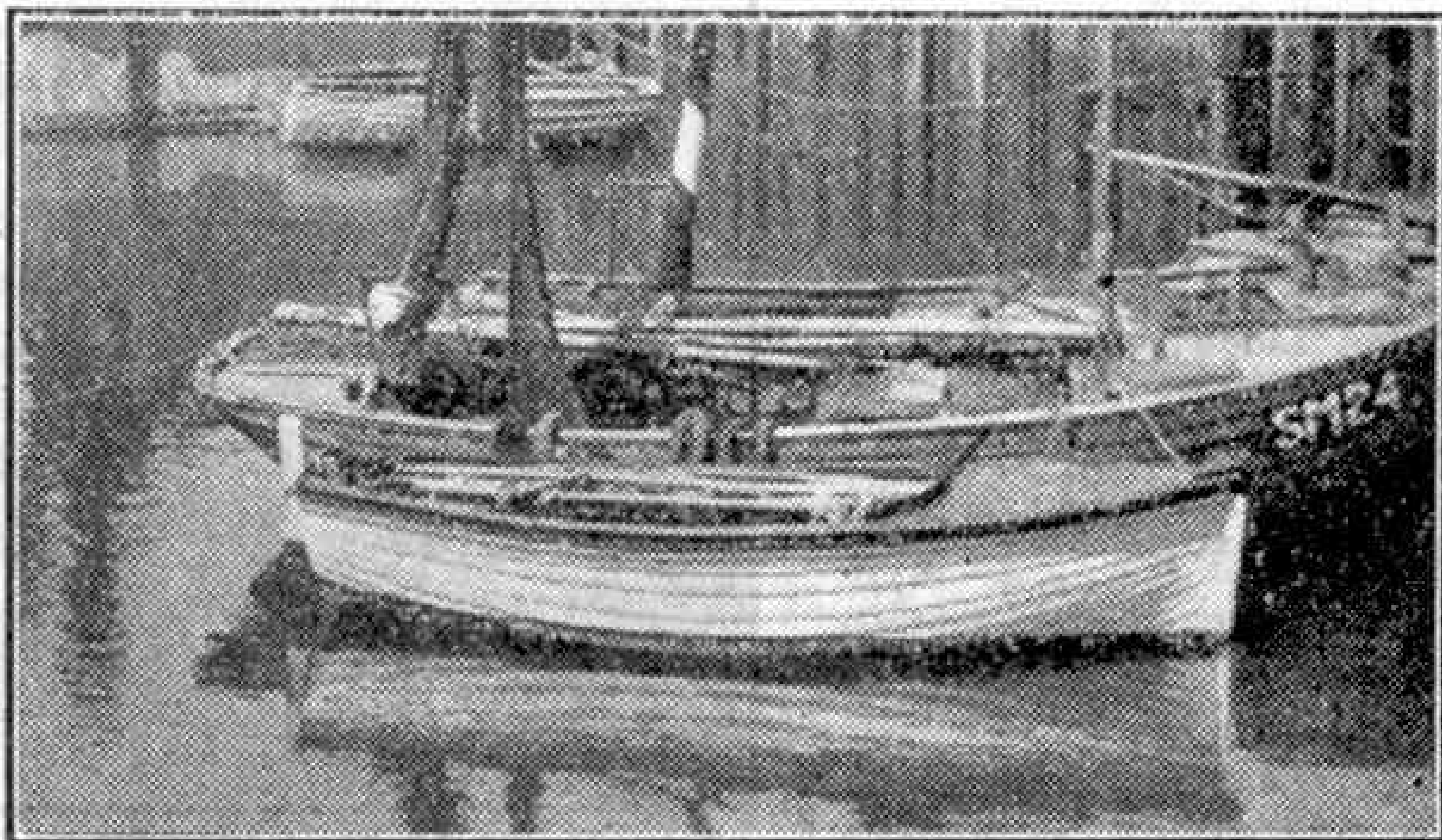
It may be taken for granted that many readers, in spite of advice to the contrary, will have neither exposure meter nor calculator. For these readers it may be of some help to suggest an exposure of $1/50$ sec. at $F/16$ on sunny days during the morning after breakfast and the afternoon up to 4 o'clock, with Selochrome or Verichrome film. The exposure should be doubled if beach scenes containing dark rocks or near boats or figures are included, or if the weather is inclined to be dull.



At work with the net. Photograph by P. F. Chapman, St. Leonards-on-Sea.

subject, the most important thing is to have an interesting foreground. A snapshot of the open sea looks hopelessly dull; a foreground of boats or rocks is definitely required. In the same way a snapshot of a stretch of crowded beach is seldom successful; provide a foreground of two or three figures and the scene comes to life.

Available subjects naturally depend very much on the place, but almost any part of the coast will produce good subjects. The best plan is to wander



Boats at Anchor. Photograph by W. C. Brown, Hove 4.



Club and Branch News



WITH THE SECRETARY

WINDING UP THE SUMMER SEASON

This month we come practically to the end of the Summer Session, with its rambles, games and excursions. It is a good scheme to bring this period to a climax with a special effort of some kind. This may be a particularly good excursion, to the seaside or some other favourite resort, that will give members a final opportunity for the season of enjoying a really good time together out of doors. I am all in favour of this, but if possible an outdoor event such as a garden party or a sports meeting also should be arranged to which parents and friends of members and others interested in the Club can be invited. With a little bit of judicious publicity the event may be made of real advantage to the chief aims of the Club. Any such event should be very carefully organised to make the most favourable impression. Otherwise more harm than good would result.

OUTDOOR PHOTOGRAPHS

This month too will offer almost the last opportunity during the present season of securing good outdoor photographs of members, for the days are shortening by the end of August and the lighting then is not so good. I particularly asked Leaders and Chairmen of Branches to keep photographs of this kind in mind during the summer, and I trust that a final effort will be made this month by those who have not so far been able to do anything along these lines. Nothing pleases members of a Club better than to see photographs of themselves in the Magazine, and such photographs have a definite effect on recruiting.

PROPOSED CLUBS

- LEICESTER—Mr. P. H. Pittam, 11, St. Paul's Road.
 PLYMOUTH—B. Laity, 14, Ferrers Road, St. Budeaux.
 CARDIFF—R. A. Rees, 9, Clodien Avenue, Heath.
 WATERFORD—B. Lee-Cooper, No. 2, The Terrace, Roanmore, Eire.
 BOURNEMOUTH—M. A. P. Arnold, 30, Seabourne Road, Boscombe East.
 LONDON E.13—G. B. W., 87, Jedburgh Road, E.13.

PROPOSED BRANCHES

- LONDON N.W.4—M. Lustig, 33, Vincent Court, Bell Lane, Hendon.
 HIGH BLANTYRE—A. McLachlan, 15, School Lane, High Blantyre, Glasgow.
 BEXHILL-ON-SEA—D. Pink, 5, Lionel Road.

BRANCHES RECENTLY INCORPORATED

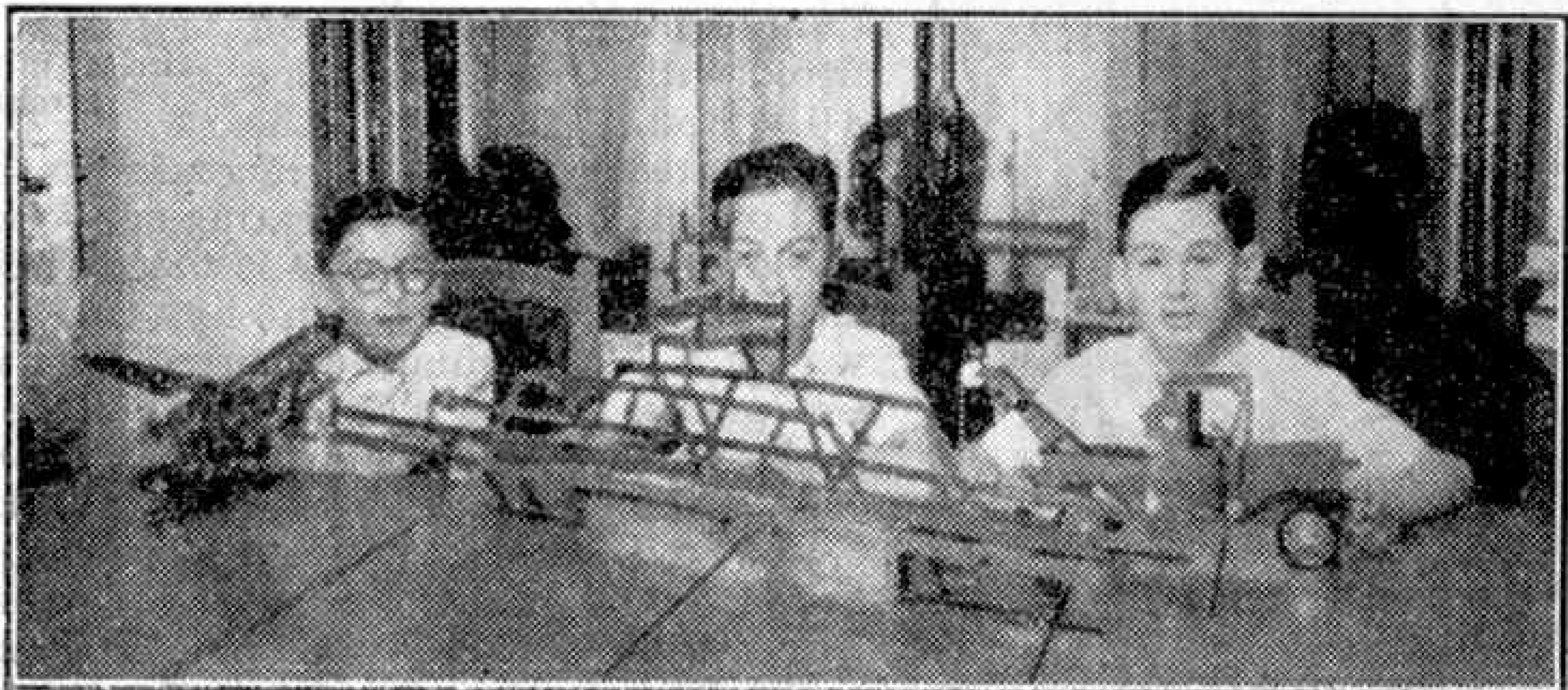
- 505—GRAYSWOOD—W. J. P. Powell, Little Shoelands, Grayswood, Haslemere.
 506—HUNTINGDON—H. W. Potter, St. Peter's House, Huntingdon.

CLUB NOTES

MORDEN M.C.—This newly affiliated Club has a Cycling Section and a Sports Organisation. Hornby Train Nights for the "Red" and "Blue" groups are arranged separately. A Talk on "Standard Mechanisms" has been given by Mr. H. B. Moyer, Leader. Club roll: 26. *Secretary*: A. C. Manifold, 100, Thurleston Avenue, Morden, Surrey.

HUNTINGDON M.C.—Mr. H. J. Hibbin was elected President at a recent General Meeting. The Treasurer reported that £5 was in hand after all expenses had been paid. During the summer outdoor activities have included Rambles and Cricket. A Visit has been paid to the London Zoo, and Walton-on-the-Naze was the scene of the Club's Annual Outing. Club roll: 60. *Secretary*: F. Saddington, 9, Avenue Road, Huntingdon.

HORNSEA M.C.—A lively programme has been



R. L. Musso, C. Musso and E. F. Ricci, members of the recently formed Monte Video M.C., Uruguay. The models they are showing were prize-winning entries in Model-building Contests in which aircraft, bridges and motor vehicles were to be constructed. Such competitions are held regularly and constitute the Club's chief activity.

followed by all Sections. The Juniors enjoyed a Motor Boat Outing on Hornsea Mere and Film Shows have been given. Model-building Nights continue and Talks have been given on locomotives and other subjects. Club roll: 47. *Secretary*: D. Kitching, 25, Clifford Street, Hornsea.

WATERLOOVILLE AND COWPLAIN DISTRICT M.C.—Model-building Confests continue to provide great excitement, and steady progress is made with model-building practice. A doll's house has been built and presented to the Children's Ward of the Royal Portsmouth Hospital. Rambles in the woods for nature study also are being enjoyed. Club roll: 8. *Secretary*: Mr. B. Jefferson, 12, The Curve, Lovedean, Hants.

BRANCH NEWS

STROUD—Both indoor and outdoor layouts have been the scenes of Hornby Railway operations. A Social has been held, and sectional cricket matches have produced keen encounters. *Secretary*: D. Hargest, 6, Folly Lane, Stroud.

SHIRLEY AND DISTRICT—All running is to timetable, with insistence on punctuality. A joint cycle ride with the Manwick C.C. was enjoyed. Mr. H. B. Moyer, now Leader of the Morden M.C., has given an interesting Talk on how a Club should be run. Meetings end with refreshments and the Branch Library is very popular. *Secretary*: D. J. Hancock, "Glenhurst," 26, Wickham Avenue, Shirley, Croydon, Surrey.

Among the Model-Builders

By "Spanner"

A Variable Cutter

A large number of useful tools can be made from Meccano parts, and the illustration on this page shows an interesting variable cutter designed by Mr. M. Mann, Norwich. This device can be fitted to the chuck of an ordinary hand drill and will cut holes of any desired radius, within limits, in cardboard or thin wood.

The Drift 1 is clamped in the chuck of

a drill, and carries a Coupling 2 fitted with a $1\frac{1}{2}$ " Rod. The outer end of this Rod is also fitted with a Coupling, and this carries the cutting tool 3. This can be shaped

are formed by the bolts 2. These bolts act also as supporting lugs for a $2\frac{1}{2}$ " Driving Band, which serves as the brake spring and normally prevents the shoes from making contact with the brake drum. If desired, a short length of rubber tubing can be passed over the heads of the bolts 2 to increase the braking effect.

The operating cam consists of a Collar 3. A $\frac{1}{2}$ " Bolt 4 is fitted with a Fishplate fixed in position, by two nuts, and passed through a slotted hole in the Face Plate. The shank of the Bolt 4 is screwed into a tapped hole of the Collar 3, and the grub screw of the Collar is tightened so that it screws against the Bolt 4 and fixes the Collar to the shank of the Bolt. The Bolt 4 is located in the slotted hole by a Fishplate 5, which is also bolted to the Face Plate. The bolt holding the Fishplate 5 is fitted with two nuts, so that its shank is held clear of the brake shoes.

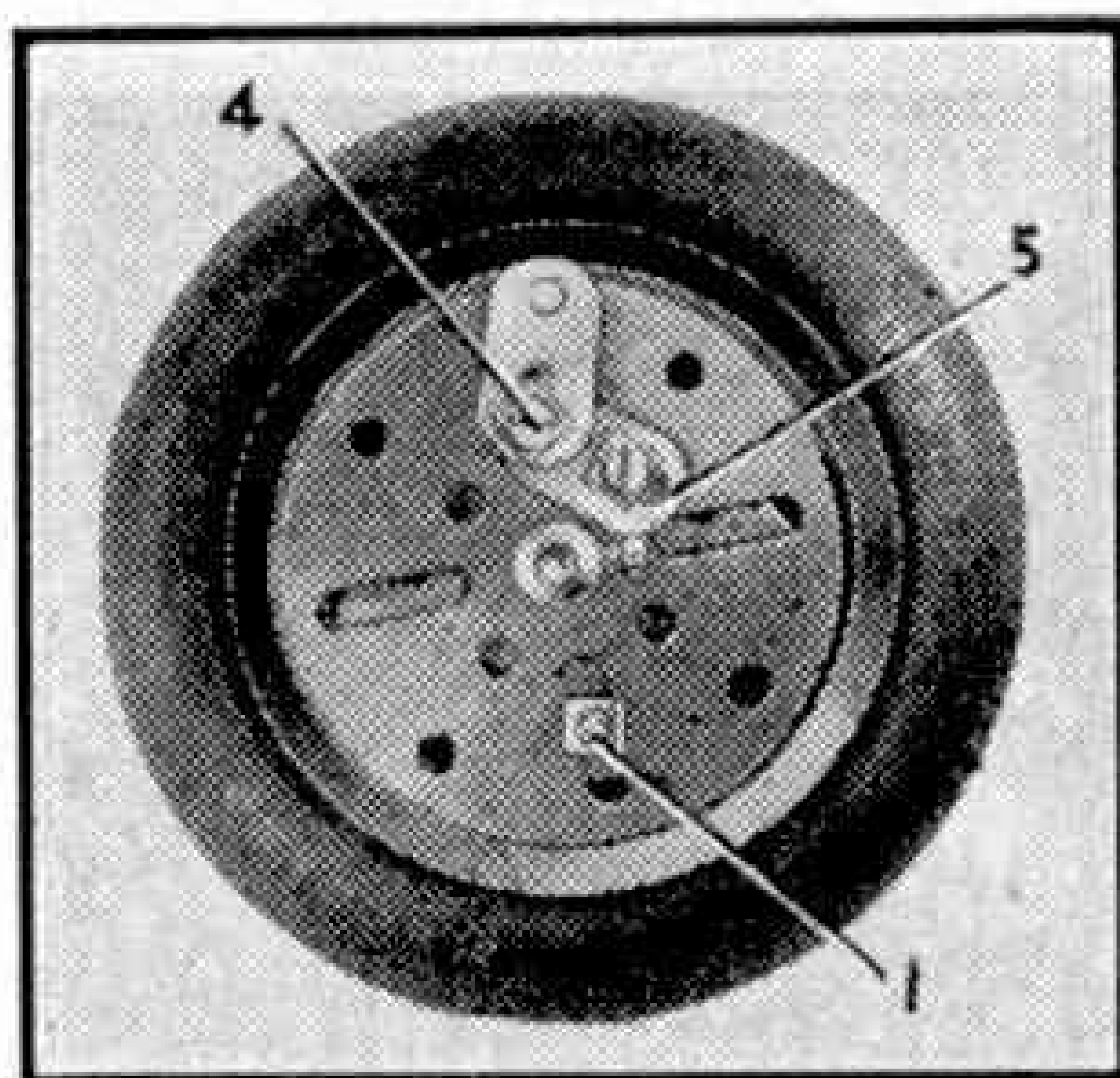


Fig. 1. A rear view of a simple internal expanding brake mechanism

from a Rod or a suitable piece of hardened steel. To use the cutter the distance of the tool from the Drift is adjusted to the desired radius, and the Drift is inserted in a hole drilled at the centre of the material to be cut away. The hand drill is then used in the normal way.

Internal Expanding Brake

The simple internal expanding brake shown in Figs. 1 and 3 requires only a few parts for its construction, and is very efficient in operation. It is suitable for either cable or rod control.

The brake shoes consist of two Bell Cranks without bosses, and these are attached to a slotted hole of a Face Plate by a lock-nutted $\frac{3}{8}$ " Bolt 1. The friction surfaces of the shoes

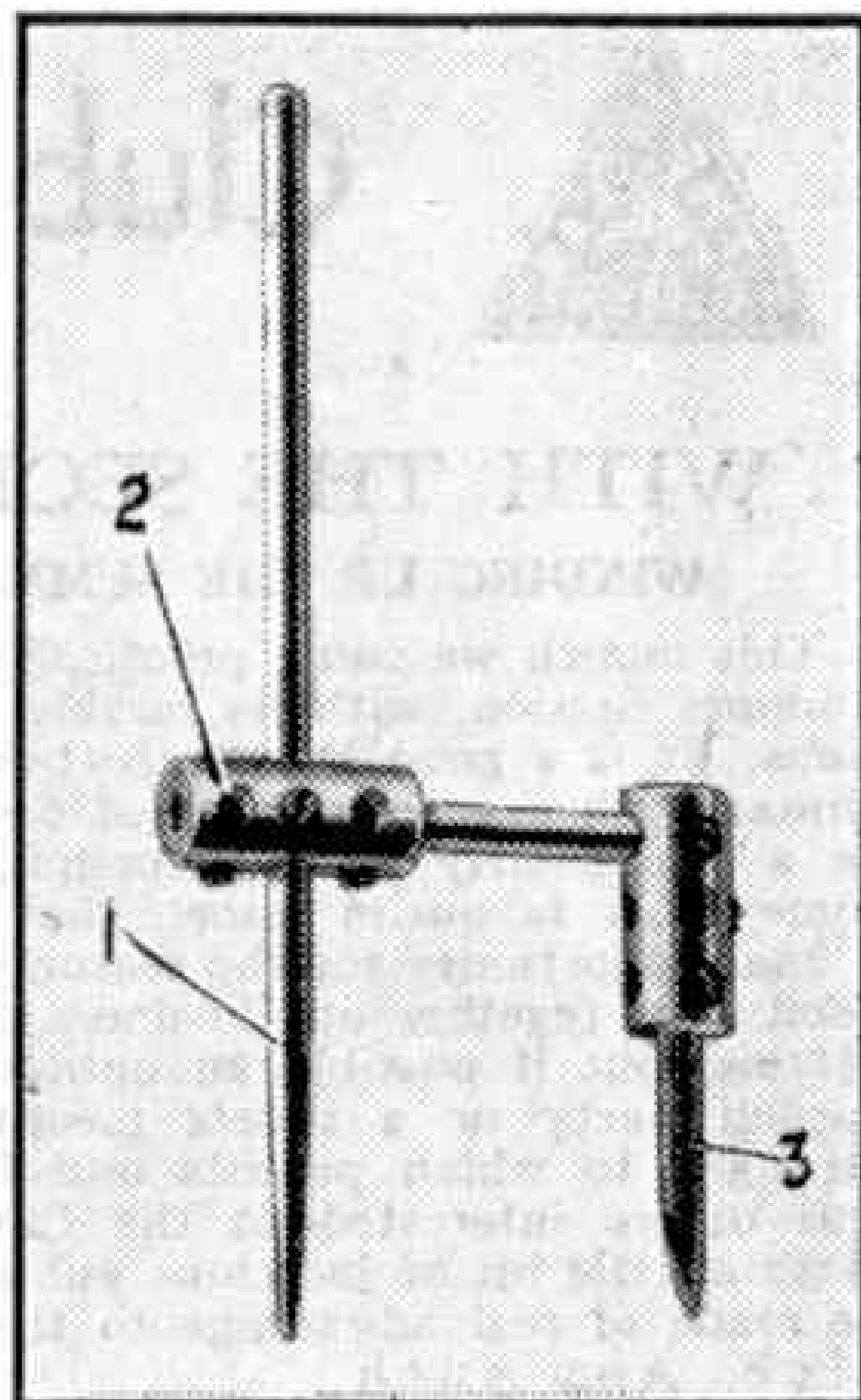


Fig. 2. A simple tool for cutting circles of various diameters in cardboard or thin wood.

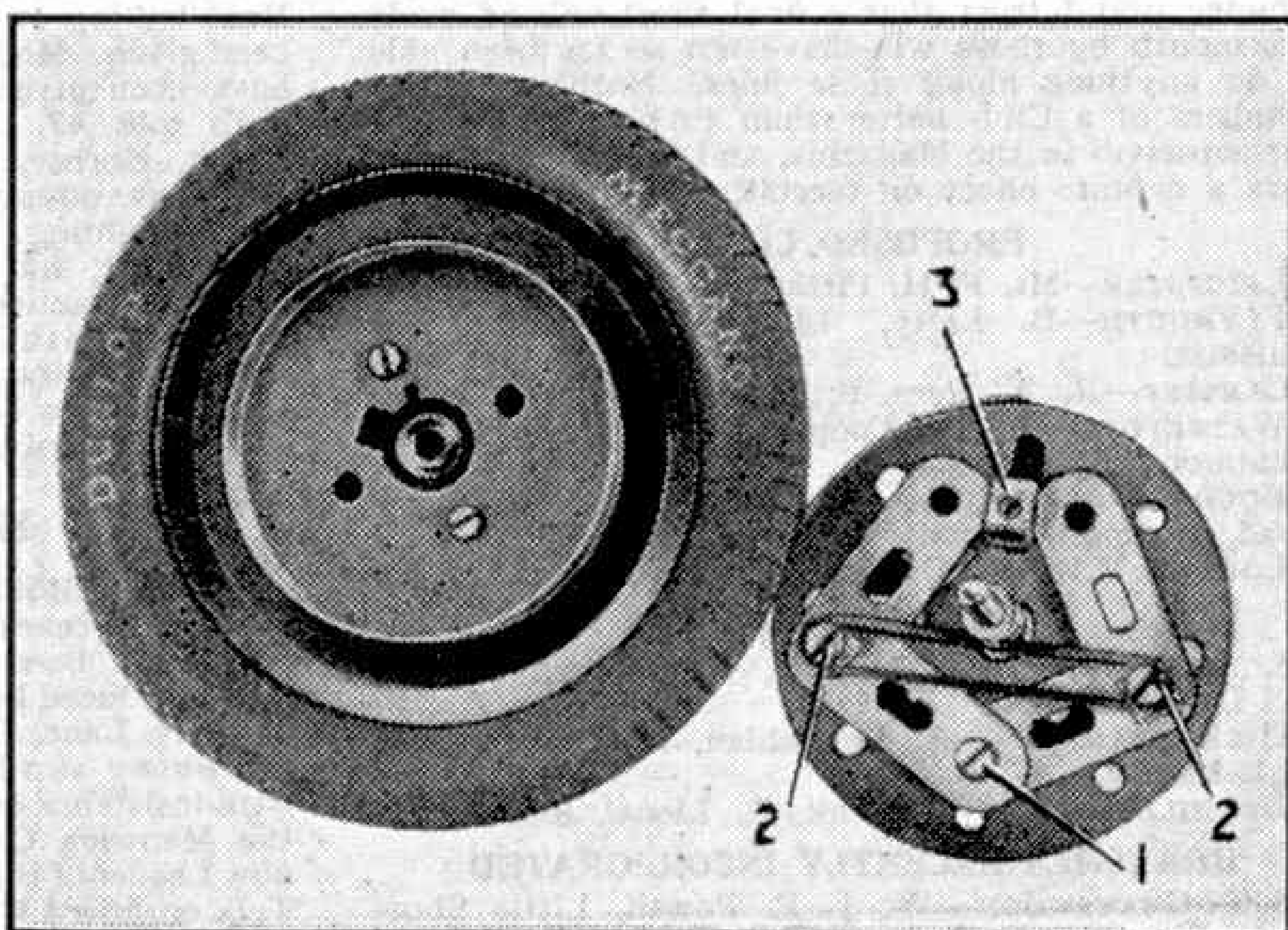


Fig. 3. The internal expanding brake described on this page shown with the wheel removed from the axle.

Eiffel Tower in Miniature

From the Gold Coast we have received details of a fine model of the Eiffel Tower, 11 ft. in height and fitted with automatic lifts. The model, which is illustrated on this page, was built by Mr. E. A. Kinder, Meccano Representative for Nigeria and the Gold Coast, and Mr. A. Caunt, and was designed for display in a large store. It follows the construction of the real tower very closely, and when completed it was found to stand quite rigidly, without the use of a base board or any form of ties across the legs.

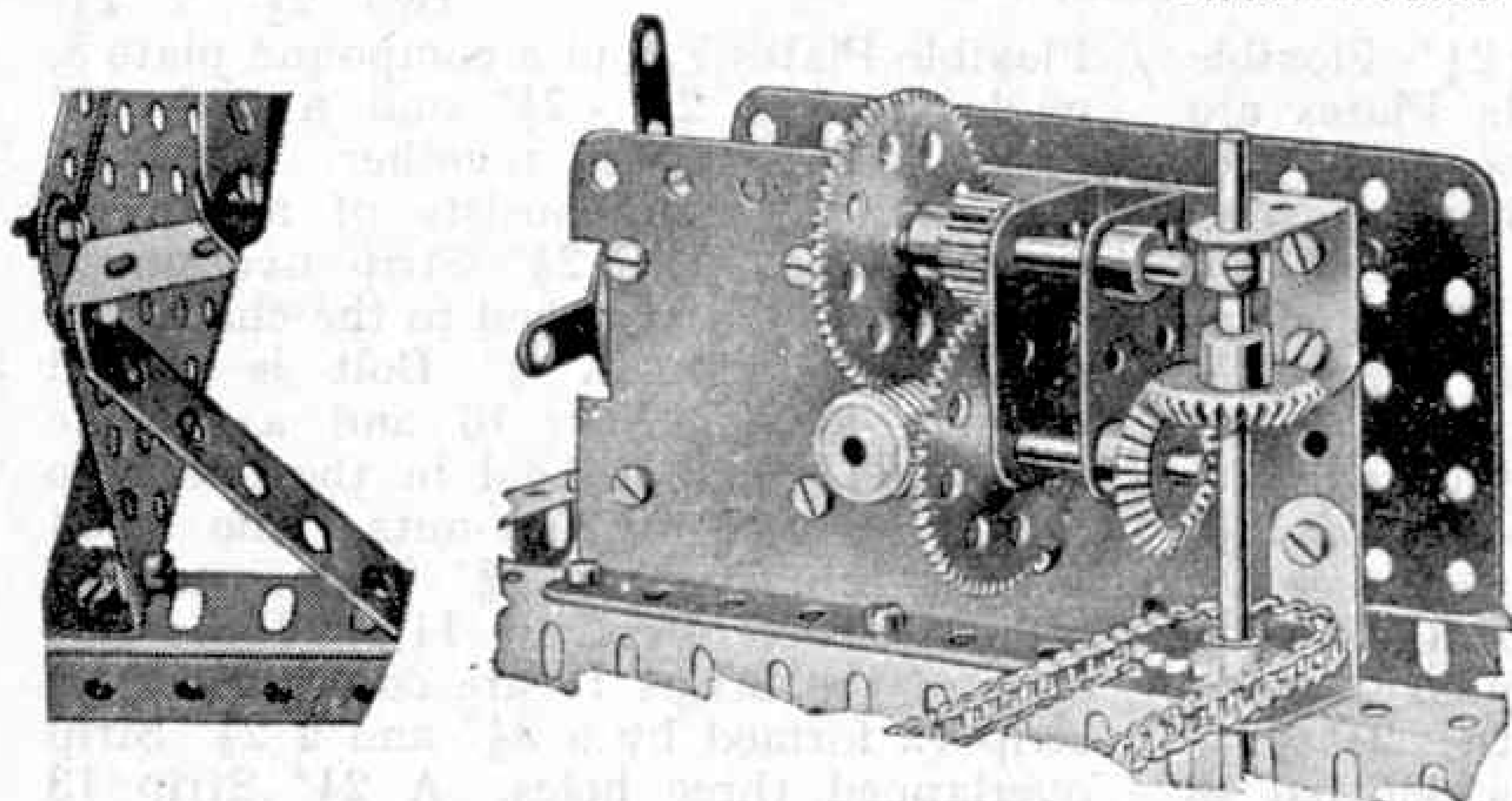
The mechanism for operating the lifts is driven by a high-voltage motor, and the reversing mechanism is similar to that used in the Transporter Bridge shown in the Meccano Instructions Book for Outfit No. 10.

This is one of the largest Towers made in Meccano that I have seen. Is it a record? I shall be glad to hear from any readers who have built giant towers of this kind, and to receive details of their models.

How to Use Meccano Parts

Channel Bearing (Part No. 160)

There are many parts in the Meccano range that can be used as bearings for Rods, and among these is the Channel Bearing (Part No. 160). This is particularly useful in special circumstances as it is small but rigid, and therefore suitable for fixing in places where space is limited. An example of its use is seen in Fig. 5, where it is attached to the side of an Electric Motor to provide bearings for two Rods on which the reduction gearing is mounted. To build up similar bearings from other Meccano parts would require a good deal of time and a number of small parts.



Figs. 4 and 5. Examples of the uses of a Reversed Angle Bracket and the Meccano Channel Bearing.

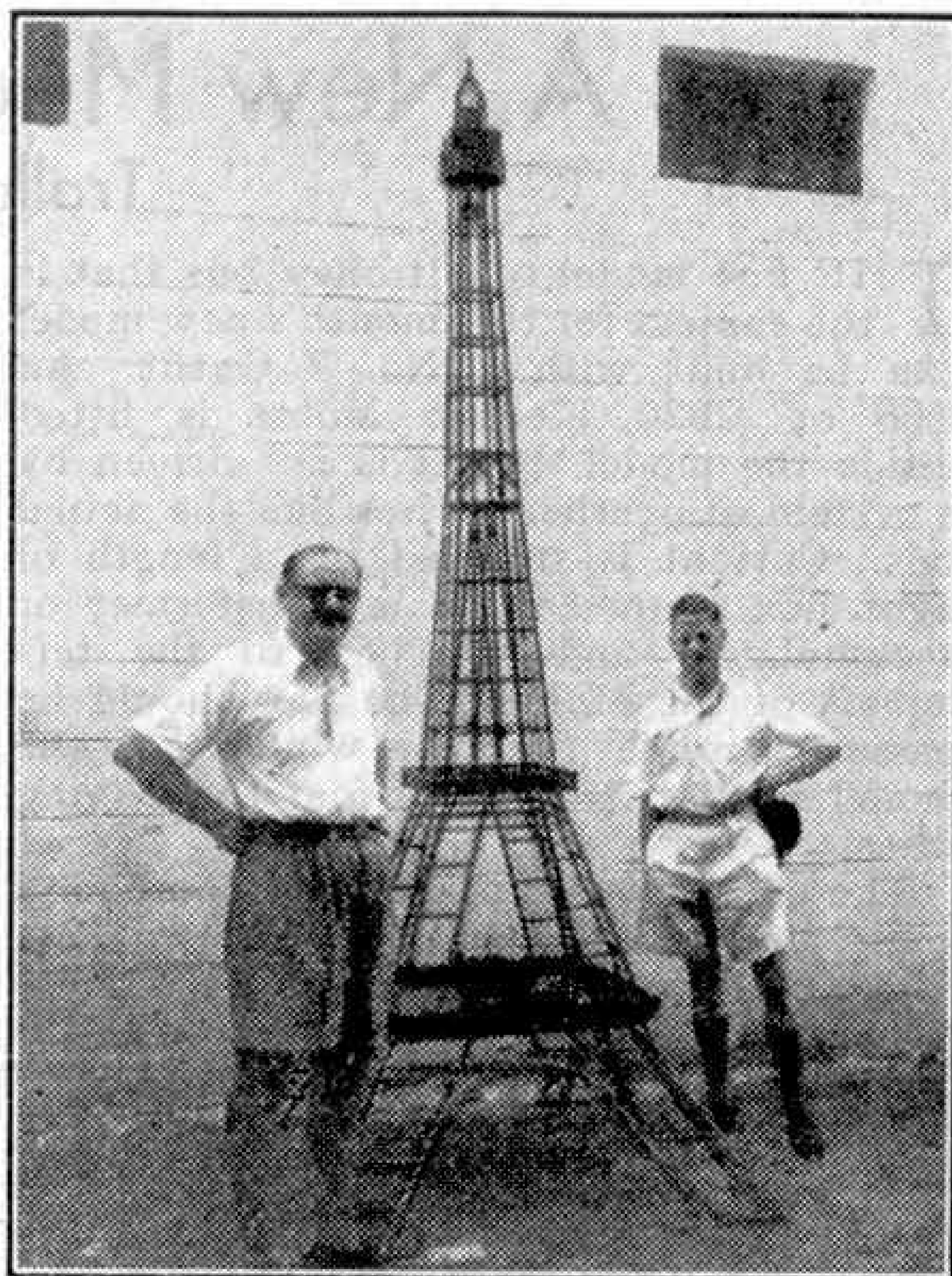


Fig. 6. A fine model of the Eiffel Tower built by Mr. E. A. Kinder and Mr. Caunt, Accra, Gold Coast.

Reversed Angle Brackets (Parts Nos. 124 and 125)

The Reversed Angle Brackets are very useful parts. They are available in two sizes, 1" and $\frac{1}{2}$ ", the dimensions referring to the centre portion of the parts only. The ends are turned at right angles to the centre to form a flange about $\frac{1}{2}$ " in length. The flanges are provided with round and elongated holes. Fig. 4 shows a 1" Reversed Angle Bracket used as a support for the dashboard of a motor chassis. Both types can be used to reinforce bearings for Rods.

Girder Frame (Part No. 113)

Girder frames are both useful and ornamental, and they give a very fine appearance to models when properly used, as in finishing off the ends of large girder constructions and in forming bridging pieces between the vertical girders in towers and similar structures.

Among mechanical applications they provide bearings for overhead shafting in model engineering workshops.

A New Meccano Model

Trolley Bus

THE fine model of a trolley bus that is the subject for this month's new model can be built with a No. 7 Outfit. An E06 or E020 Electric Motor is fitted inside the model, but it is not driven by a system of overhead wires like the actual bus. Current is supplied by a length of light flex connected to a transformer or accumulator, and attached to the terminals of the Motor. The flex should be passed through the rear window of the model so that it does not foul the driving wheels.

The chassis is formed of two compound angle girders, each consisting of two $12\frac{1}{2}$ " Angle Girders overlapped 12 holes. These girders are connected at each end by a $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip, and a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate 1 is bolted to one of these Double Angle Strips to form the front of the driving compartment. The off side of the lower saloon seen in Fig. 2 consists of a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate, two $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates, half of a Hinged Flat Plate, a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ "

Flexible Plate, and a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. The $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates are arranged in a horizontal position over the front and rear wheels of the model. The side is bolted to four vertical $5\frac{1}{2}$ " Strips, which are attached to a compound strip 2 consisting of two $12\frac{1}{2}$ " Strips overlapped 13 holes. The upper ends of the $5\frac{1}{2}$ " Strips are connected by a compound girder 3, formed by two $12\frac{1}{2}$ " Angle Girders overlapped 15 holes.

The near side of the model, seen in Fig. 1, is built up in a similar manner to the opposite side, but the $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate at the rear is omitted to allow for the platform. The $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate over the rear wheel is

extended downward by a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate 4, and the Plates are attached to a compound strip 21.

Each side of the upper saloon is formed by a $12\frac{1}{2}$ " Strip Plate and a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. These are bolted to the girders 3, and connected at the front by a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate. The Flanged Plate is attached to $5\frac{1}{2}$ " Strips bolted at a slight angle to the strips 2 and 21. The $5\frac{1}{2}$ " Strips are extended upward by $2\frac{1}{2}$ " Strips 5, which support a compound strip 6 on each side of the model. The strips 6 are made from $12\frac{1}{2}$ " and $5\frac{1}{2}$ " Strips overlapped two holes, and their rear ends are fixed to $1\frac{1}{16}$ " radius Curved

Plates forming the upper part of the curved panelling at the rear. The Curved Plates are attached to a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " and a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plate. These Plates are curved slightly and bolted to the girders 3, and are strengthened by two Formed Slotted Strips and a $3\frac{1}{2}$ " Strip. The panelling at the rear of the lower saloon consists of two $2\frac{1}{2}$ " \times $2\frac{1}{2}$ "

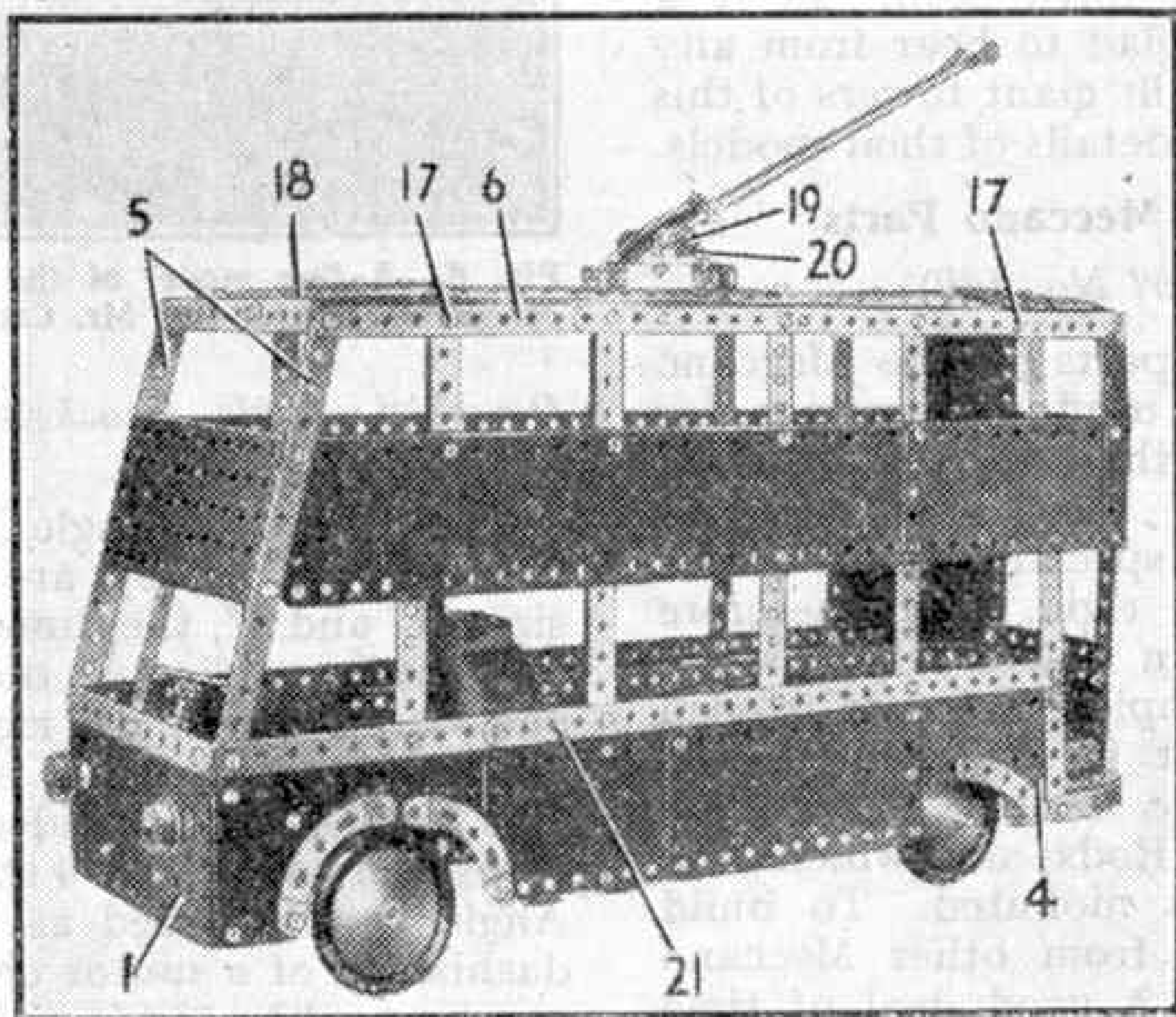


Fig. 1. Outfit No. 7 contains all the parts required to build this realistic Trolley Bus.

Flexible Plates 7, and a compound plate 8, made from a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " and a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate bolted together.

The front axle consists of a strip 9 formed by a $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Strip overlapped three holes, and attached to the chassis by Angle Brackets. A $\frac{3}{8}$ " Bolt is passed through a $1\frac{1}{2}$ " Strip 10 and a Double Bracket 11, and is held in the end hole of the strip 9 by lock-nuts. The Road Wheels are fixed on $1\frac{1}{2}$ " Rods mounted in the Double Brackets 11, and the free ends of the Strips 10 are connected by a strip 12 formed by a $3\frac{1}{2}$ " and a $2\frac{1}{2}$ " Strip overlapped three holes. A $2\frac{1}{2}$ " Strip 13 is fastened to the strip 12, and is connected by lock-nuts and a $2\frac{1}{2}$ " Strip to

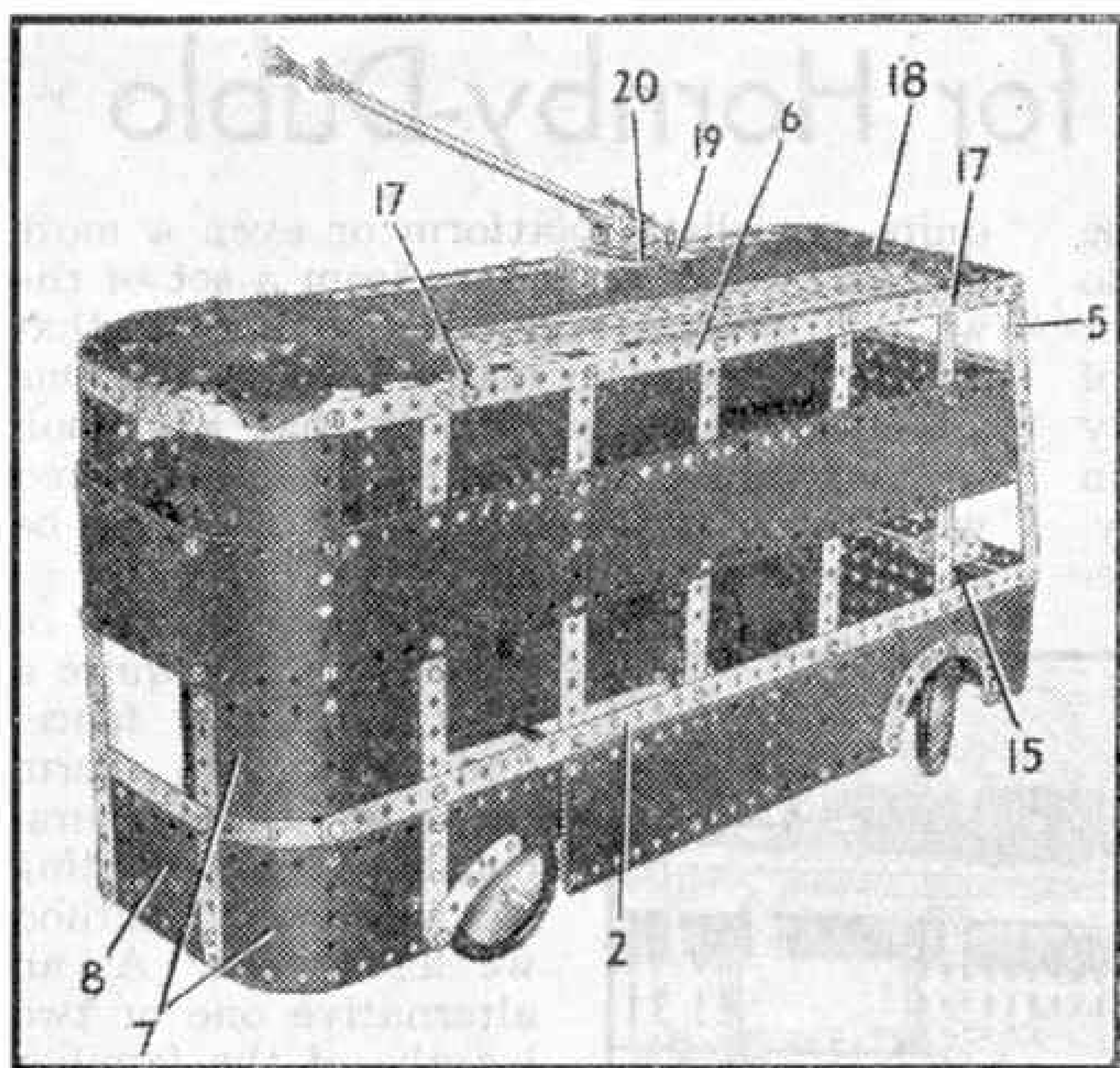


Fig. 2. Another view of the Trolley Bus.

a Crank 14. This Crank is fixed on the lower end of the steering column, which is mounted in a Flat Trunnion 15 and one of the chassis girders.

An E020 or E06 Electric Motor is attached to the chassis by Fishplates as shown, and is connected by a Driving Band to a 2" Pulley fixed on an $11\frac{1}{2}$ " Rod 16. This Rod is mounted in a $3\frac{1}{2}$ " and a $2\frac{1}{2}$ " Strip attached to the chassis by $\frac{1}{2}" \times \frac{1}{2}"$ and $1" \times 1"$ Angle Brackets respectively. The Rod 16 is fitted with a Worm, which meshes with a $\frac{1}{2}"$ Pinion on the rear axle. The rear axle consists of a $6\frac{1}{2}"$ Rod, and is mounted in Flat Trunnions bolted to the chassis.

The roof is attached to $5\frac{1}{2}"$ Strips fixed to Obtuse Angle Brackets held by the Bolts 17. The edges of the roof are filled in by three $12\frac{1}{2}"$ Strips on each side, and the centre is formed by three $3\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plates and two $4\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates. The front consists of a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate 18, and the rear portion is filled in by Flexible Plates of various sizes arranged as shown in Fig. 2.

Each of the trolley booms consists of a 5" and a $4\frac{1}{2}"$ Rod joined by a Rod Connector. The booms

are fitted at their lower ends with Collars, and a $\frac{1}{2}"$ Bolt 19 is passed through one of the lugs of a $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 20 and screwed into each Collar. The Double Angle Strip 20 is attached by a lock-nutted bolt to a $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flanged Plate fixed to the centre of the roof by $\frac{3}{4}"$ Bolts. A Spring is bolted to the Flanged Plate and to a Coupling connecting the booms.

This Month's Model-Building Competition

Have you ever won a prize in a model-building Contest? If you have not, there is all the more reason why you should enter the contest announced here, for you may win one of the fine prizes offered. All you have to do is to build a Meccano model entirely from your own ideas. This may be of any type, and the only condition is that it must be your own unaided work. You are eligible to compete in this contest no matter what your age may be, and there is ample time before the closing date in which to find an interesting and original subject and then build it in Meccano.

Any size of Outfit may be used in building models.

After the model is built the next job is to obtain a suitable illustration of it. This may be either a photograph or a sketch. Write your age, name and address on the back of the illustration, and enclose it, together with a brief description of the model and its operation, in an envelope addressed "August General Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13."

Entries will be grouped into two Sections, and a competitor's age will be taken into consideration when assessing the merits of his work. Section A will be for competitors of all ages living in the British Isles, and all entries from Overseas competitors will be placed in Section B.

The prizes to be awarded in each Section for the best-built and most interesting models received are: First, Cheque for £2/2/-; 2nd, Cheque for £1/1/-; 3rd, P.O. for 10/6. There will be also consolation prizes of 5/- each for entries of merit that do not gain major awards.

The closing date for Section A is 30th September, but entries for Section B will be accepted until 31st December next. All prize-winners will be notified by letter.

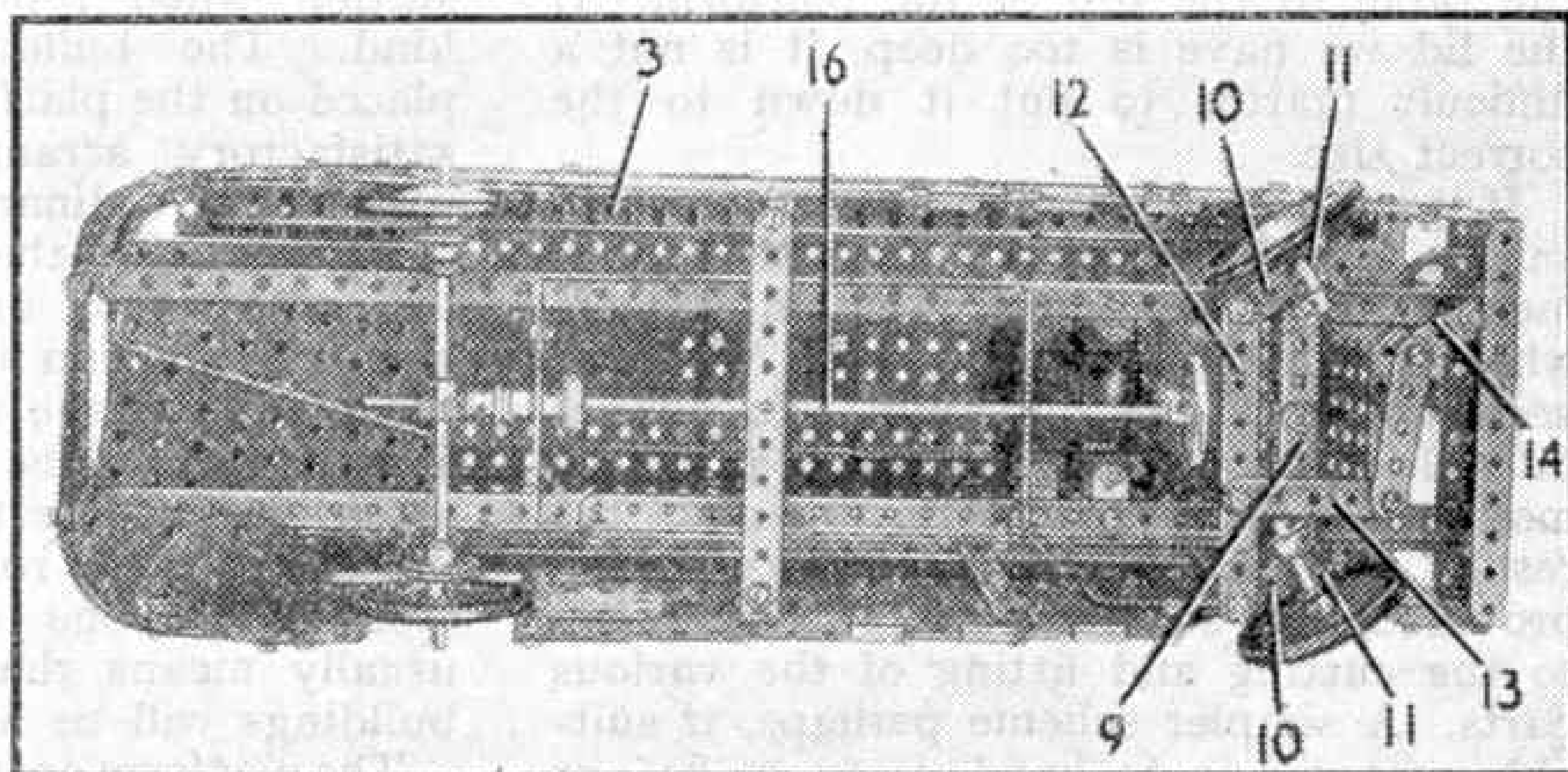
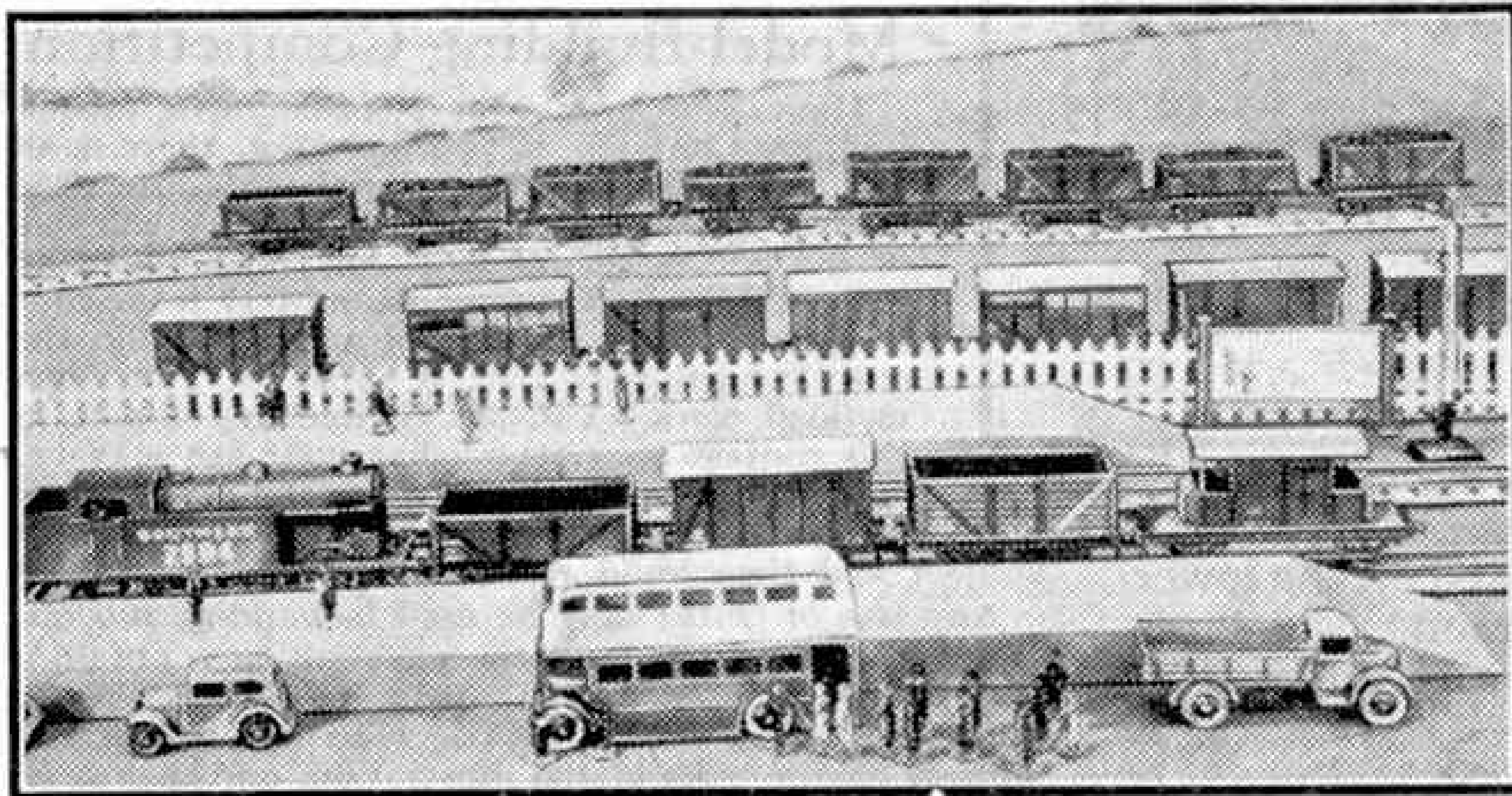


Fig. 3. The Trolley Bus seen from underneath, showing the steering and driving mechanisms.

Simple Stations for Hornby-Dublo

ONE of the first things we need in the development of a Hornby-Dublo layout is a suitable stopping place for our train. In other words a station of some kind is necessary; for practically nowhere else can a passenger train begin or end its journey or halt intermediately. So far it has not been possible to re-

quite a realistic platform or even a more or less complete station, from a set of the wooden or other building "bricks" that are to be found in many households. One advantage of their use is that a station so constructed can be altered as required with little trouble, if this should be necessary.



A simple two-platform station on a Dublo layout. The platform on the far side has Hornby Paled Fencing.

introduce the Hornby-Dublo stations that were familiar before the war.

In its simplest form our station can consist of merely a platform which, as suggested previously for gauge 0, can be a box lid of suitable size. For use alongside the line, rather than between two tracks as an island platform, the width will not matter a great deal, and we will assume that the length of the lid chosen is satisfactory. What does matter is the depth. For Hornby-Dublo trains the platform should measure $\frac{3}{4}$ in. from the table to the top of the platform. If the lid we have is too deep, it is not a difficult matter to cut it down to the correct size.

If preferred a wood-and-card structure can be built up to meet their own requirements by those Hornby-Dublo owners who are more particular, and who are keen on work of this kind. No special difficulties should be experienced in the making of a plain platform, and the result will probably be quite pleasing provided that sufficient attention is given to the cutting and fitting of the various parts. A simpler scheme perhaps, if suitable material is to hand, is to make our platform of solid wood.

Sometimes it is possible to build up

reasonable for Hornby-Dublo purposes.

A station building of some kind should really be provided, although some model railway owners prefer to do without these as they sometimes interfere with the view of the trains. This depends a great deal on the type of the station and its position on the layout. The station building can be simply a plain awning or it can be more of a solid structure representing the usual rooms and offices. Most miniature railway engineers try to follow to some extent the features of their own local station when reproducing items of this kind. The building may be centrally placed on the platform, and this is quite a satisfactory arrangement which fits in with most ordinary layout schemes.

Alternatively the building can be placed at, or nearer to, one end of the platform, but this position is invariably related to the layout of the road approach. This is a matter that is not always given the attention it deserves in miniature. The presence of a road bridge or a level crossing at one end of the platforms usually means that the principal station buildings will be at that end too.

The platform or station should be painted, if possible; and the platform should have a white line along the outer edge.

The normal type of platform will require a back wall or fence, and this can form part of the general construction according to whichever method we have used. As an alternative one or two lengths of the familiar Hornby Paled Fencing, if we can get hold of it, will be quite useful. This scheme is shown in the illustration. The height of this fencing, when it is attached to the bottom of the platform, is quite

A Reader's Hornby "Joint Line"

THE accompanying illustration shows part of the layout operated mainly with Hornby locomotives and rolling stock by "M.M." reader M. G. Hare. This is known as the "Fenton and Middleton" line, and it is supposed to be operated generally by L.M.S. and G.W.R. stock, with certain Southern workings as well. The layout is arranged on a waist-high baseboard and is accommodated in a garage. For the most part it is clockwork operated, although there is an electrified section which it is hoped to extend later.

The main line is roughly square. One side, which we will call the "north," is extended to serve the main terminus station "Fenton." Actually connection of this terminal extension is also made with the "east" side of the main line, so that a triangular junction is formed at this point. "Fenton" has four main platform faces and, as shown in the illustration, there is a short "bay" let into one of the main platforms.

At the moment there is no direct connection to the main line from either this bay or the platform track next to it. For the movement of separate vehicles, such as vans for perishables or parcels traffic—often dealt with at main passenger terminals—this does not matter much.

For greater convenience in operation, however, a direct line and some sidings are under construction between this side of the station and the east side of the main track circuit. This will have the effect of enclosing the turntable and engine shed premises between two sets of approach lines. From this it will be realised that the turntable and shed are situated near the outer ends of the platforms and are thus readily accessible from the station. When these alterations are completed, trains will be able to run straight on to the main line from either side of the station.

Just by the junction on the "north" side is "Fenchurch," a single-platform

station of the less important type. "Middleton" is on the "south" side of the system and is a two-road station. Here there is a turntable with several sidings, which are useful because this station is frequently used as a secondary terminus where trains can begin or end their runs between this point and the main terminal. In fact, at "Middleton" station passengers can join the "Fenton Flyer," one of the most important trains on the line. But let the owner and operator of the railway tell his own story:

"As we wait at 'Middleton,' a stopping train hauled by a G.W.R. Hornby '101' Tank pulls into the opposite platform. When it has gone off on its way to 'Fenchurch' another similar 0-4-0T shunts several bogie coaches from the siding alongside our platform.

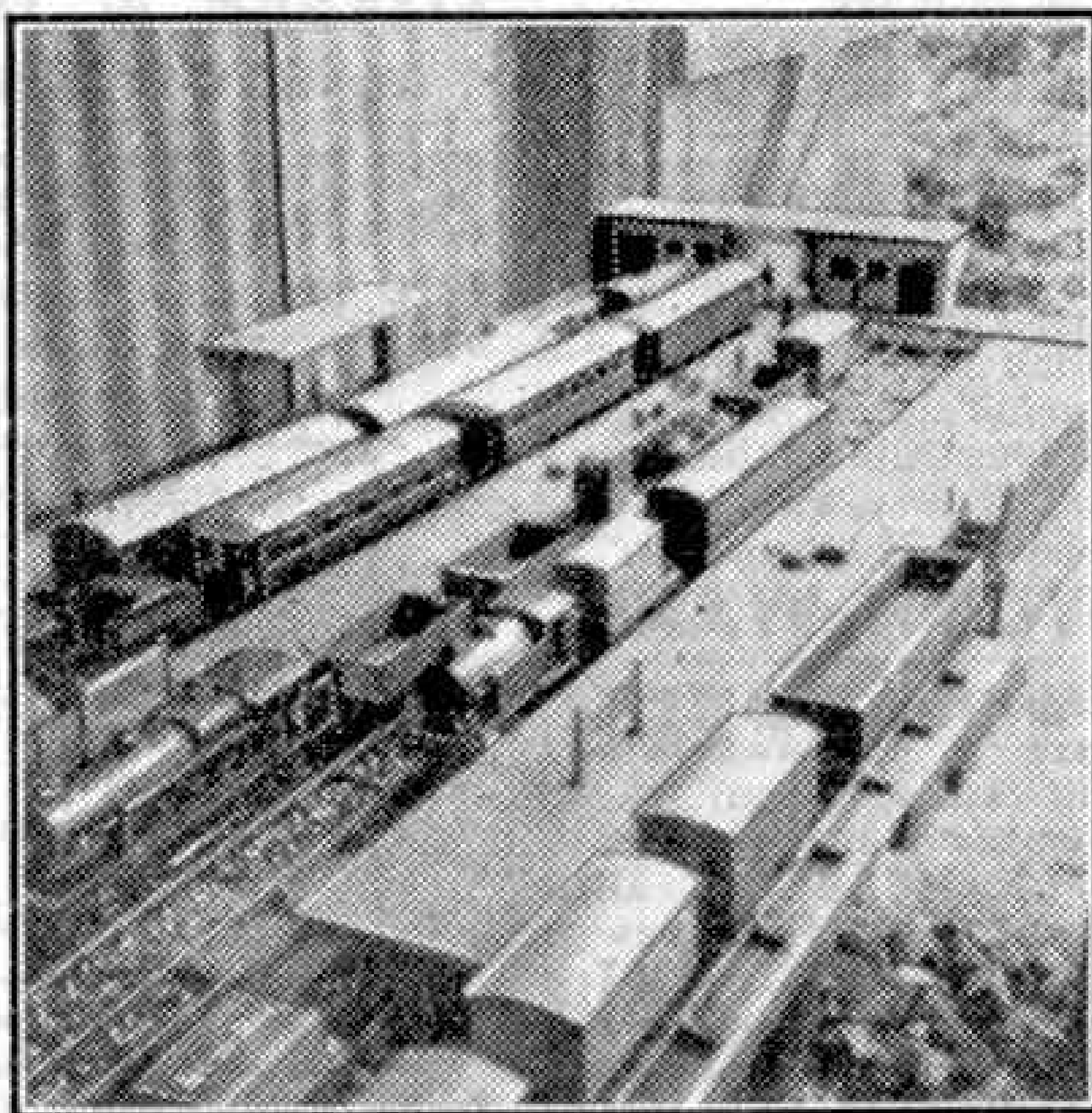
Having performed its duties this engine returns to the shed. Now the locomotive which is to haul our train backs on, a veteran Hornby 4-4-0 painted in G.W.R. green but now lettered 'British Railways' in pale cream.

"Almost directly after leaving the station we plunge into a tunnel. As we emerge and tackle the severe 'gradient' we bear to the left past the beginnings of a new housing site. A fitted freight train,

consisting of 14 wagons hauled by a Hornby 4-4-2T in L.M.S. colours, passes us on the down line. A long straight run through the open country follows; after which, on gaining the junction, we bear to the right past 'Fenton' locomotive department where a 4-4-0 and 4-4-2 are under construction.

"A Hornby Southern 'Lord Nelson' and a 4-4-0 'Schools class 'Eton' on loan from another company are at work in the unfinished goods yard; and a home-built Southern 4-4-0 is being turned in order to make the return journey with the 'Middletonian' express.

"Future plans include total electrification and colour-light signalling."



"Fenton" terminus station on the Hornby layout of Michael G. Hare, Old Sodbury, Bristol.

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G. L. WRIGHT (Originally H. C. Watkins, Barnet), Dept. T, Palace St., Canterbury, Kent

Stamp Collecting

Olympic Games Issues

By F. Riley, B.Sc.

THE XIVth Olympic Games began in London on 29th July. They have a genuine stamp interest, for one of the three British commemorative sets with which our postal authorities have surprised us this year is to be issued in connection with them. The appearance of Olympic Games commemorative stamps is not a novelty;



most countries in which they have been held have celebrated them in this manner, but Great Britain did not follow this practice on the only previous occasion when the Games were allotted to this country.

The revival in modern times of the Olympic Games of ancient Greece came only in 1896. The original Games were of the greatest importance in the Greece of the

classical period, and in fact Greek dates were given in Olympiads, or periods of four years between successive Games. They were held at Olympia, a religious centre, consisting of an enclosure in which were a temple of Zeus, or Jupiter, with other temples and shrines, a council chamber and treasuries in which Greek states deposited their offerings. There were also a wrestling ground, a stadium and various buildings for the use of the competitors, in some of which they carried out their final training, and a hippodrome was added when chariot races were instituted.

When the Games actually began it is impossible to say, but they are believed to have been re-organised in the 9th century before Christ, and the traditional list of victors begins in 776 B.C. The earliest event, and the most important one, was a short foot race of about 200 yds. Among other events added later were races of greater length, wrestling, boxing, chariot races and an all-round athletic contest involving a variety of sports, the predecessor of the pentathlon of to-day. There were no state or national contests; the competitors were all individuals, free-born Greeks, and the only

prizes were wreaths from the sacred olive grove. The glory of victory in the Games was enormous, however, and an Olympic winner



usually reaped substantial rewards in money and privileges from his city.

Interest in the Olympic Games was revived in the later years of last century by a series of excavations that revealed the plan of the ancient religious and sports centre. While the Greek Games were in progress the Greek world was always at peace, and it was thought by many that instituting new Games would help to develop a spirit of brotherhood among modern nations. The result was the holding of the first of the modern series, naturally allotted to Greece itself, in 1896.

One of the schemes set on foot to raise the money

required for the Games was the production of a special set of stamps. Thus commemoratives have been associated with the modern Olympic Games since their establishment, and although some have passed without this distinguishing feature, enough Olympic Games issues have appeared to make an interesting special collection. Most of the stamps can be obtained without great outlay, although some of the high values of the earliest sets have gone up a little in price; and the present British issue can be added at face value. Games of future years almost certainly will bring other issues, so that the collection will grow, and interest in it should be revived every four years. This period is the interval between successive Games now, as in ancient Greece. Wars prevented the holding of Games in the years 1916, 1940 and 1944, but the cancellation of these meetings has not altered the numbered sequence of the games, in accordance with a rule of the Olympic Charter. This explains why this year's event is described as the XIVth, although it is actually only the 11th occasion on which the Games have actually been held.

Of the first Olympic Games stamps, to which reference has already been made, most were directly concerned with the games themselves. For instance, the 1 lepta and 2 lepta stamps show gladiators of ancient Greece, while on the 5 l. and 10 l. values a discus thrower is seen about to hurl the missile. The 25 l. stamp illustrates the quadriga, or four-horse chariot race. The 1 dr. shows the Stadium in which the games were held, with the Acropolis beyond it, while the highest value



of all again pictures the Acropolis, crowned with the remains of the classical buildings that adorned it. Other stamps illustrate Greek art, one of them showing a famous statue of Hermes, or Mercury, by Praxiteles, that was discovered at Olympia during the excavations of last century.

The next Games, those of 1900 and 1904, were held in Paris and at St. Louis, U.S.A., respectively, and the Greek example of issuing commemorative stamps was not followed. The next set in fact came from Greece once more. It commemorated the Games held in Athens in 1906, however, and these are not included in the official Olympic series. Actually it was not until 1920 that a genuine Olympic Games set again appeared, the issuing country being Belgium; the Games themselves were held at Antwerp. There were only three stamps in this issue, and they were sold at a small premium, the proceeds of which were devoted to the benefit of men wounded in the first World War.

This Belgium set marked a new era in the association of Olympic Games and stamp issues, for all the Games that have since been held have been marked by the appearance of commemoratives. France came next, with an issue of four stamps in 1924. Holland followed in 1928 with a series of eight stamps, which introduced into the designs fencing, football, yachting, boxing and rowing. The range of Olympic designs (Cont. on page 287)



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For other Stamp Advertisements see also pages 280 and xii.

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If you collect BRITISH COLONIALS and like to have all the latest issues, write to-day asking us for a selection of our COLONIAL APPROVALS including all the NEW ISSUES. Postage please to: **AUSTIN BROS. (S.D.A.), 294, Malden Rd., CHEAM, Surrey**

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Stamp Gossip and Notes on New Issues

By F. E. Metcalfe

ALTHOUGH it is some months since the first news was received regarding the forthcoming "Silver Wedding" stamps for the colonies, collectors—and dealers—are still rubbing their eyes and wondering if they are really awake or not, for a set of stamps with a face value of about £40 can hardly be credited when it is remembered that those responsible are the authorities at our conservative Colonial Office.



At the same time, some of the outrageous comments made in the ill-informed American philatelic press do nothing more than reflect adversely on the

people who made them. Nevertheless, it has been a very shortsighted move, and a century of good work has been undone in one single blow. The philatelic societies continue to protest, but in vain apparently, and all that can be done now is to try and get the Colonial Office to say that they will not repeat the dose.

Apart from the "Wedding" stamps, collectors of modern colonials are finding it a hard task to keep pace with the many new issues. A bolt from the blue was the three sets for use in Eritrea, Somalia and Tripolitania, with a total face value of £2 13s. 2½d., not to mention postage dues for another 2/1½d. These stamps are displacing the E.A.F. and M.E.F. stamps, which have been anything but popular, but owing to their unpopularity they should be worth buying, for the 10/- of the latter set at least is quite scarce.

The U.S.A., in spite of what they have to say, continue to turn out commemorative stamps, and they have a very extensive programme for the rest of the year. We are illustrating a rather doleful stamp, printed in black, in honour of the four chaplains who lost their lives during the war in heroic circumstances; then there is to be a stamp in honour of the 100 years of friendship with Canada, and among many others one in honour of the late Will Rogers.

Austria is another country which keeps up the good work, with such beautiful issues that one can forgive Austria anything.

If the writer of these notes was asked which was the most beautiful set ever, he would be inclined to award the palm to the "Flowers" set of Austria, which appeared in May. The design and engraving are exquisite, and all philatelists should buy a set, just for the beauty of the thing. Incidentally a complete set can be bought for just over three shillings, so the purchase will not be a financial strain like a set of our "Wedding" stamps.



And after talking about the most beautiful set, we can go from the sublime to the hideous, and illustrate a copy of a stamp which is all that a stamp should not be. Here we have a current stamp from Siam, which must be the poorest of all time. The design, the paper and the centering could not be worse.

There are many other stamps we would like to illustrate this month, one of a very

fine set from Liberia, another from Sweden and yet another from Chile; but we have only room for one more and the place must be given to the attractive air-mail stamp from India. There will be no need to tell "M.M." readers what the 'plane is which appears on the stamp; suffice it to say that it is this type of machine which is being used on the new India to Great Britain air service, and the stamp was issued for use on the first flight only from Calcutta to London. The stamps are not particularly scarce and many collectors will want a copy, for they were in use for a very short time.

Collectors have had their eyes on the West Indian stamps ever since the news broke that the currency of the various British colonies there was to be changed from sterling to dollars. It was expected that this would cause a change in the stamps, and this is precisely what has happened. St. Vincent is the first country to make the change, but matters are made more complicated by the news that Leeward Islands are to have new colours for stamps up to 3d., but

still in sterling. Verily the ways of our Colonial Office are beyond the understanding of ordinary mortals.

It is to be hoped that all those blank spaces for colonial stamps of the present reign have been filled by now, for the advent of the new Gibbons' catalogue—any day now—should make for a greatly increased demand for obsolete values. This means increased prices, and with so many stamps to buy, collectors have simply got to buy as cheaply as possible, so it won't be a bad idea to put off buying that new bat or racket until next season, and filling the sets with the cash saved.

One of the most popular sets of the year has been that from Mauritius, which was issued to commemorate the centenary of its first stamps. This set should be off sale any time now, and as it may appreciate rapidly in value, once it becomes obsolete, don't delay buying it. Another set which is already obsolete is the commemorative set of Ceylon, which is simply asking to be bought at its present price. These colonial commemorative sets always do well in the long run.

And now for the month's best buy. Those who can afford one should buy a copy of the 10/- M.E.F. Those with not quite so much to spend might get together nice used copies—as many as they can—of the Channel Island stamps. Dealers need large quantities and they are not getting them. These stamps will never be very rare, but they have already the making of what collectors call "nice little items."



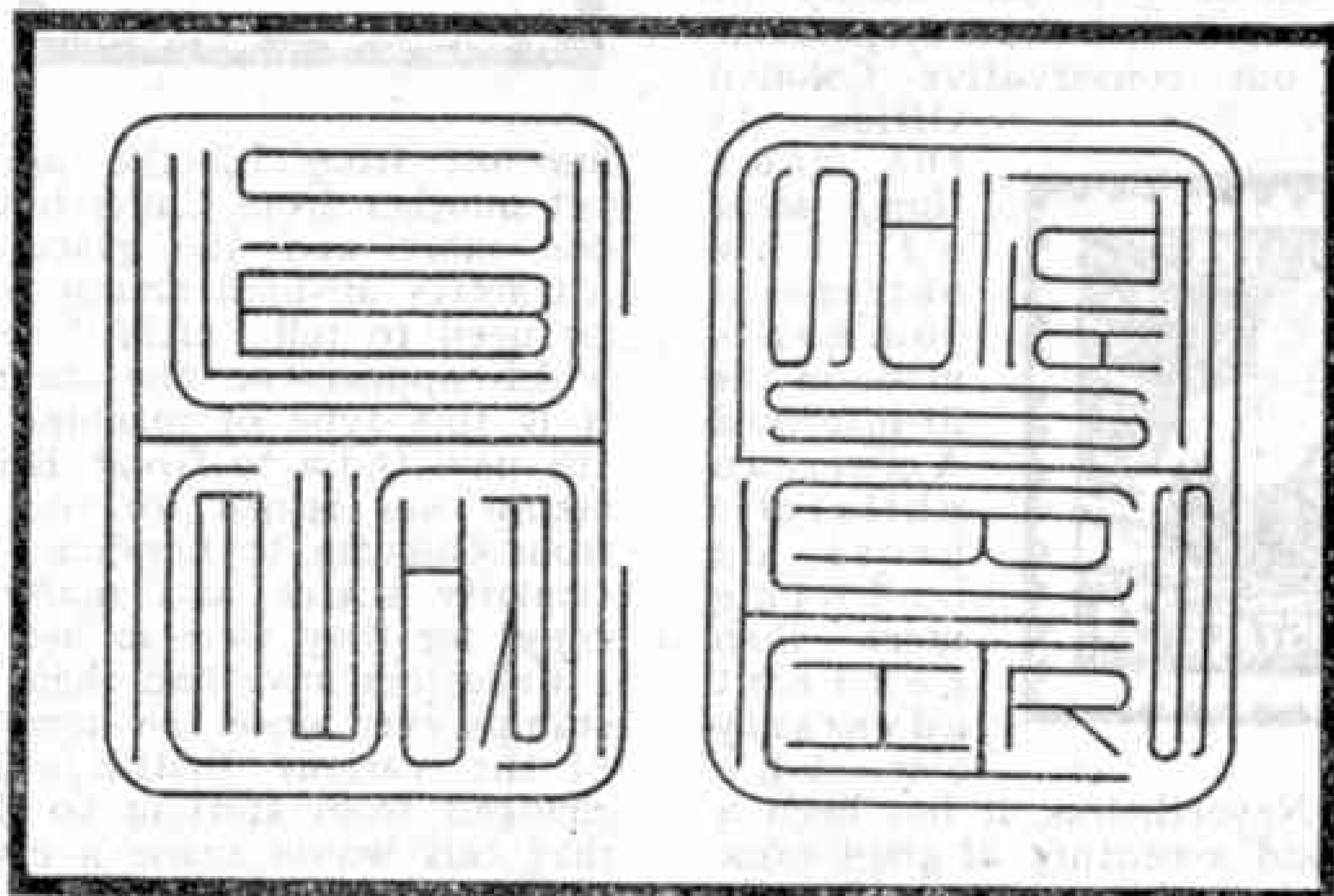
Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Name Squares Contest

We hope that all our readers are enjoying a very good time during the holiday season. As we do not wish to deprive them of any opportunities of delightful recreation in the open air at this season of the year, our chief competition this month is one that will not make too great a demand on their time, either in actual solving or in the preparation of entries.

The basis of the contest is the drawing reproduced on this page. This looks puzzling, but it will be seen at a glance that there are a few obvious letters in it. It is indeed constructed entirely of letters, but most of these are disguised by altering their shapes, and the majority of them are made up of straight lines instead of the usual curves. Yet none of them has been so much distorted that it cannot be recognised. Readers are asked to track down the



letters one by one, and then to build up with them the names of four advertisers in this issue. These names form the solution, and all that is required is that they should be written on a postcard or a single sheet of paper. If they wish competitors can make their entries attractive in themselves, and in the event of a tie for any one prize the judges will take this into consideration in giving their verdicts.

In each of the two sections in this competition, for Home and Overseas readers respectively, there will be prizes of 21/-, 15/- and 10/6, with consolation prizes for other deserving efforts. Entries should be

addressed "Name Squares Contest, Meccano Magazine, Binns Road, Liverpool 13." The closing date in the Home Section is 30th September; that in the Overseas Section is 31st March, 1949.

An Olympic "Quiz"

When this issue of the Magazine makes its appearance we shall be in the midst of the Olympic Games, held this time at the Wembley Stadium. All readers of the "M.M." naturally will be keenly interested in these, and as many as possible will find opportunity for going to Wembley in order to see the world's greatest athletes competing with each other for the honour of Olympic victory.

With this in mind an Olympic "Quiz" seems a very suitable subject for our second competition this month. Accordingly we give below 10 questions on Olympic events, athletes and records. These of course refer to Olympic Games held prior to the present series, which will not be completed when the Magazine makes its appearance.

Here are the 10 questions that make up our competition:

1. Who holds the record for the 1,500 metres?
2. Which nation's athletes hold the greatest number of records?
3. What is the best time yet recorded for the 100 metres race?
4. Where were the last Olympic Games held, and in what year?
5. Which country has been allotted the next Games?
6. What is the Marathon distance?
7. Who holds the Marathon time record?
8. What Irish athlete holds an Olympic record and which is it?
9. How many Olympic records are held by athletes from Great Britain? What are they and who holds them?
10. What events make up the Decathlon?

Entries in this competition should be addressed "Olympic Quiz, Meccano Magazine, Binns Road, Liverpool 13." There will be two sections, for Home

and Overseas readers respectively, and in each of these there will be prizes of 21/-, 15/- and 10/6 for the best sets of replies to the questions. If necessary the judges will take the novelty and neatness of the entries themselves into consideration in deciding to whom the prizes should be awarded. Efforts that are meritorious, but fall just short of the prize-winning standard, will be awarded Consolation Prizes.

The closing date in the Home Section is 30th September; that in the Overseas Section will be 31st March, 1949.

August Photographic Contest

This is a holiday month, when readers are spending happy days on the seashore, or rambling on the moors and among the mountains, or in country surroundings. For this reason, in the 8th of our 1948 series of photographic competitions readers are asked to submit pictures of holiday scenes. There will be no difficulty in finding suitable subjects. The chief aim should be to convey the holiday spirit. It is not absolutely necessary to include figures, but most entrants probably will try to do this in order to give the right holiday appearance.

In this contest there are only two conditions, but these must be observed. The first is that the photograph must have been taken by the competitor, and the second that on the back of the print must be stated exactly what the photograph represents. A fancy title may be added if desired.

Entries will be divided into two sections, A for readers aged 16 and over, and B for those under 16. They should be addressed "August Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."

There will be separate sections for Overseas readers, and in each section prizes of 21/-, 15/- and 10/6 will be awarded. Closing dates: Home Section, 31st August; Overseas Section, 28th February, 1949.

Competitions Results and Solutions

HOME

FEBRUARY 1948 LOCOMOTIVE SHADOWS CONTEST

1st Prize: R. Francis, Nantwich. 2nd Prize: P. Salway, Southall. 3rd Prize: R. G. East, Buxton. Consolation Prizes: C. E. Wrayford, Bovey Tracey; L. Phillipson, Rossendale; J. Brown, Greenock; R. Sumner, York.

FEBRUARY 1948 FIGURE DRAWING CONTEST

1st Prize: T. Hill, Bolton. 2nd Prize: M. Barritt, Sheffield 7. 3rd Prize: M. J. Darlington, Worthing. Consolation Prizes: D. Thomas, Loftus; P. Rust, Arbroath; D. Windsor, King's Langley.

FEBRUARY 1948 PHOTOGRAPHIC CONTEST

1st Prize, Section A: P. F. Chapman, St. Leonards-on-Sea; Section B: A. Lewis, Cardiff. 2nd Prize, Section A: J. Denton Robinson, Darlington; Section B: J. Griffiths, Hengoed. 3rd Prize, Section A: S. L. Connors, New Malden; Section B: C. H. Thomas, Aldershot. Consolation Prizes, Section A: E. C. Harris, Birmingham 23; R. Atkins, Eccles; R. Wrigley, Clitheroe; Section B: A. M. Barker, Sheffield 6; I. Ward, Wellington College.

MARCH 1948 NOVEL DRAWING CONTEST

1st Prize: H. Weston, Ormskirk. 2nd Prize: Miss C. Percival, Norwich. 3rd Prize: P. C. Langley, Birmingham 8. Consolation Prizes: B. Dickson, Chatham; D. Crow, Pudsey; J. Scott, Belfast; B. R. Tilbrook, Hounslow; F. Turner, Middlesbrough.

OVERSEAS

AUGUST 1947 MISSING WORDS CONTEST

1st Prize: Miss I. Stephenson, Auckland, N.Z. 2nd Prize: T. Jackson, Auckland, N.Z. 3rd Prize: T. P. Mansergh, Auckland, N.Z. Consolation Prizes: K. Goudie, Cape Town, S.A.; E. H. R. Tenison, Colombo, Ceylon; F. P. Legg, Montreal, 28, Canada; H. Chan, Singapore.

AUGUST 1947 QUIZ

1st Prize: J. Janis, Kimberley, S. Africa. 2nd Prize: B. Linch, Oslo, Norway. 3rd Prize: P. Acres, Milan, Italy. Consolation Prizes: N. Stokes, Paris, France; P. J. Rogers, Wellington, N.Z.

AUGUST 1947 PHOTOGRAPHIC CONTEST

1st Prize, Section A: K. J. Milne, Hawke's Bay, N.Z.; Section B: T. Jones, Montreal, Canada. 2nd Prize, Section A: N. Kennedy, Johannesburg, S. Africa. Section B: R. R. Vrnjas, Johannesburg, S. Africa. 3rd Prize, Section A: J. Ditchfield, Dunedin, N.Z.; Section B: B. Jeffrey, Perth, Australia. Consolation Prizes, Section A: R. Hardy, Kenilworth, Cape, S.A.; J. A. Barton, Hong Kong; W. M. Tucker, Auckland, N.Z. Section B: R. J. Townsend, Johannesburg, S.A.; J. McLachlan, Sydney, Australia.

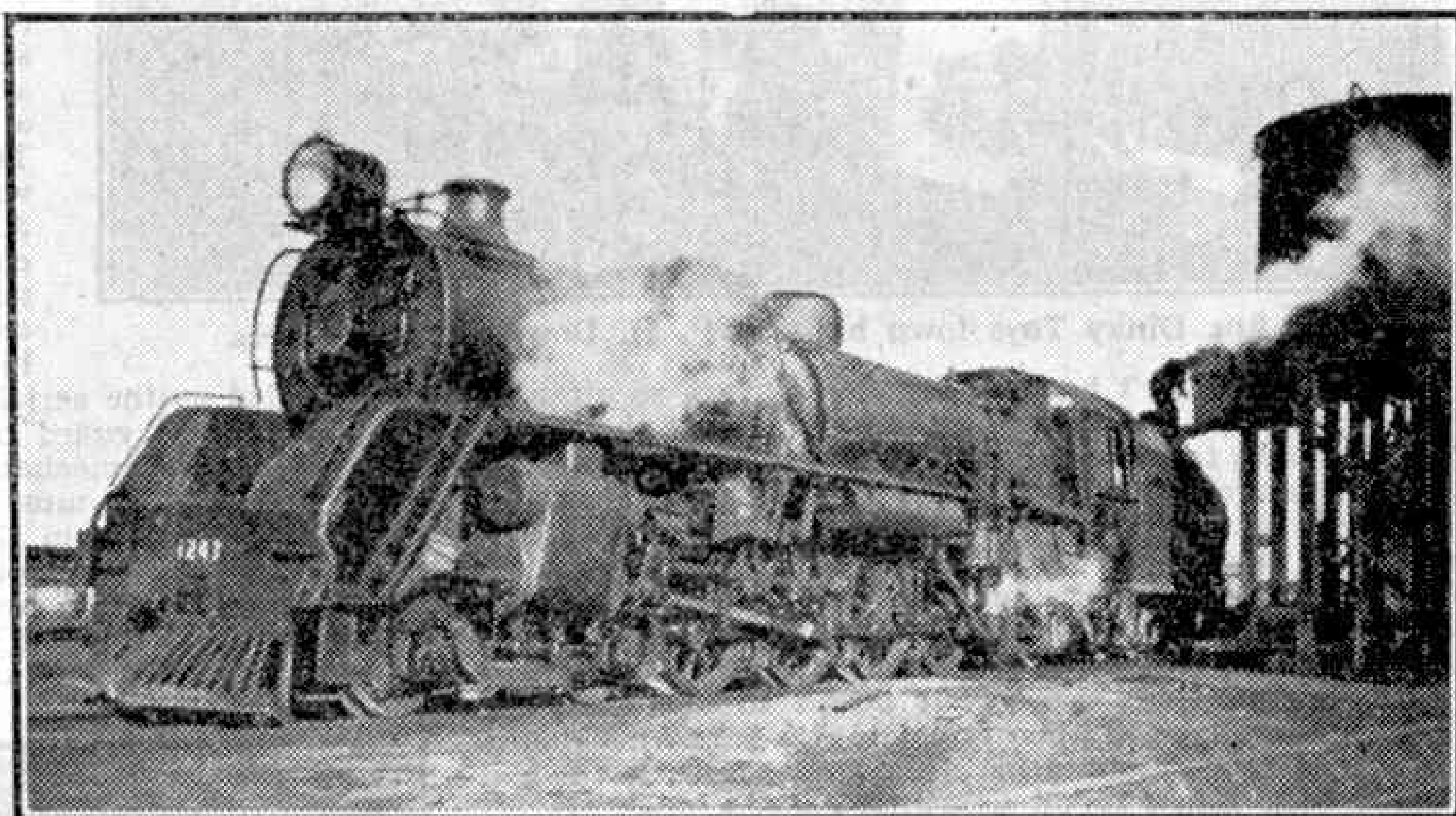
SOLUTIONS

MAY 1947 ADVERTISEMENT CONTEST

1. The Birkdale Stamp Co. 2. Foyles. 3. The Commonwealth Stamp Co. 4. Edward Sharp and Sons Ltd. 5. G. L. Wright. 6. Mars Ltd. 7. International Correspondence Schools Ltd. 8. "Gem" Approvals. 9. Lines Bros. Ltd. 10. Bond's O' Euston Road Ltd. 11. Lisburn and Townsend Ltd. 12. The Halford Cycle Co. Ltd. 13. B.S.A. Cycles Ltd. 14. Johnson & Sons Manufacturing Chemists Ltd.

JUNE 1947 ERRORS CONTEST

1. Paddington Station was not built by the Midland Railway. 2. The "Royal Scot" does not run from Paddington or serve York. 3. A person travelling to York would not start at Paddington. 4. G.W.R. Livery was not "Varnished Teak." 5. "Princess Royal" class engines are not Compounds. 6. Runcorn Bridge



"Filling-up." N.Z.R. "Ja" class 4-8-2 No. 1243 at Dunedin railway yards. A prize-winning entry by J. Ditchfield in the Overseas August 1947 Photographic Contest.

is not on the London-York route. 7. Runcorn Bridge was built in 1869 by William Baker. 8. There is no automatic signalling between Doncaster and York. 9. A train from London to York would not normally touch Wakefield. 10. There are no historic engines preserved at York station. 11. The "Rocket" was not built by Trevithick. 12. No 4-4-2 engines built by Stephenson. 13. "Highflyers" were L. & Y. 4-4-2s. 14. No "Highflyer" has been preserved. 15. "Locomotion" was not built by Hackworth. 16. Cheshire Lines Railway did not run from Crewe to Chester. 17. C.L.C. coaches are not painted green. 18. The G.C.R. had no 2-10-0 or 4-6-2 tender engines. 19. A 2-10-0 engine is not a "Pacific" type. 20. Engines with small wheels are not Express Passenger types. 21. There are no steep grades between Crewe and Chester. 22. "West Country" engines were S.R. design, and of the 4-6-2 type. 23. "Castle" class engines belonged to the G.W.R. 24. The Great Northern Railway does not now exist. 25. G.N.R. did not run to Carlisle, Blackpool or Taunton. 26. No diesel train runs between Carlisle and Blackpool. 27. Penzance is not on the Carlisle to Blackpool route. 28. No engines preserved at Penzance; "Hardwicke" is at Crewe.

AUGUST 1947 MISSING WORDS CONTEST

The correct order for inserting the missing words is: Winner, Content, Seaplane, Aircraft, Landplane, Fighters, Records, Installed, Jet, Wilson, Surpassed, Lockheed.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

• MY DINKY TOYS MODEL TOWN

It all started when I bought my first two Dinky Toys, an open car and a lorry. I decided that playing with them would be much more interesting if I made some roads. I wanted these to be permanent so



A fine Dinky Toys town built by P. H. Down, Three Bridges.

that they wouldn't have to be moved every so often. That ruled out the floor, and the next thing I thought of was the top of the cupboard in my bedroom. This measured only 5 ft. 1 in. by 1 ft. 6 in., but I thought it would serve my purpose and I proved later on that it was ideal.

I first marked out the roads with odd pieces of fencing and dominoes. I also put a garage in to add to the enjoyment. Buildings were few to begin with, but in time the layout began to look like a town or a village. I then found that I kept knocking over the fences and other things, so I stuck them down with Balsa Wood Cement.

In the meantime I had been buying more Dinky Toys, which added to the interest. I now have three main groups of traffic, private cars, lorries and vans. The largest group is formed by the private cars, of which up to present I have about 20, mostly different. In the lorry group I have four vehicles, two of which are Mechanical Horses. I have only three vans, but hope to get more soon, and I have one or two Buses and Motor Bicycles. I write names on labels that I fix on the sides of the vans. This adds considerably to the realism.

Progress as regards roads has been fairly good. Such things as one way streets and road islands are incorporated, and Traffic Signs are also included. Progress with buildings has been very good. These are of thin cardboard and include a bank, post office, garage, car showroom, police station (not yet completed) and one or two shops. There is also a station entrance, a useful place for taxis to wait in, and a bus depot, and bus stops are marked on the roads.

The accompanying illustration gives a good idea of the layout. One road, the High Street, goes right round the edge of the cupboard. The width of the roads varies from 3½ in. to 4 in., and all have a dotted line in the middle.

I propose to fix up street lighting. This involves some difficulties, since overhead wires cannot be used as they get in the way when I am playing with the layout. I hope also to add more traffic and additional buildings. I spend many happy hours playing with my model town, but much of the amusement comes in building it.

P. H. Down (Three Bridges).

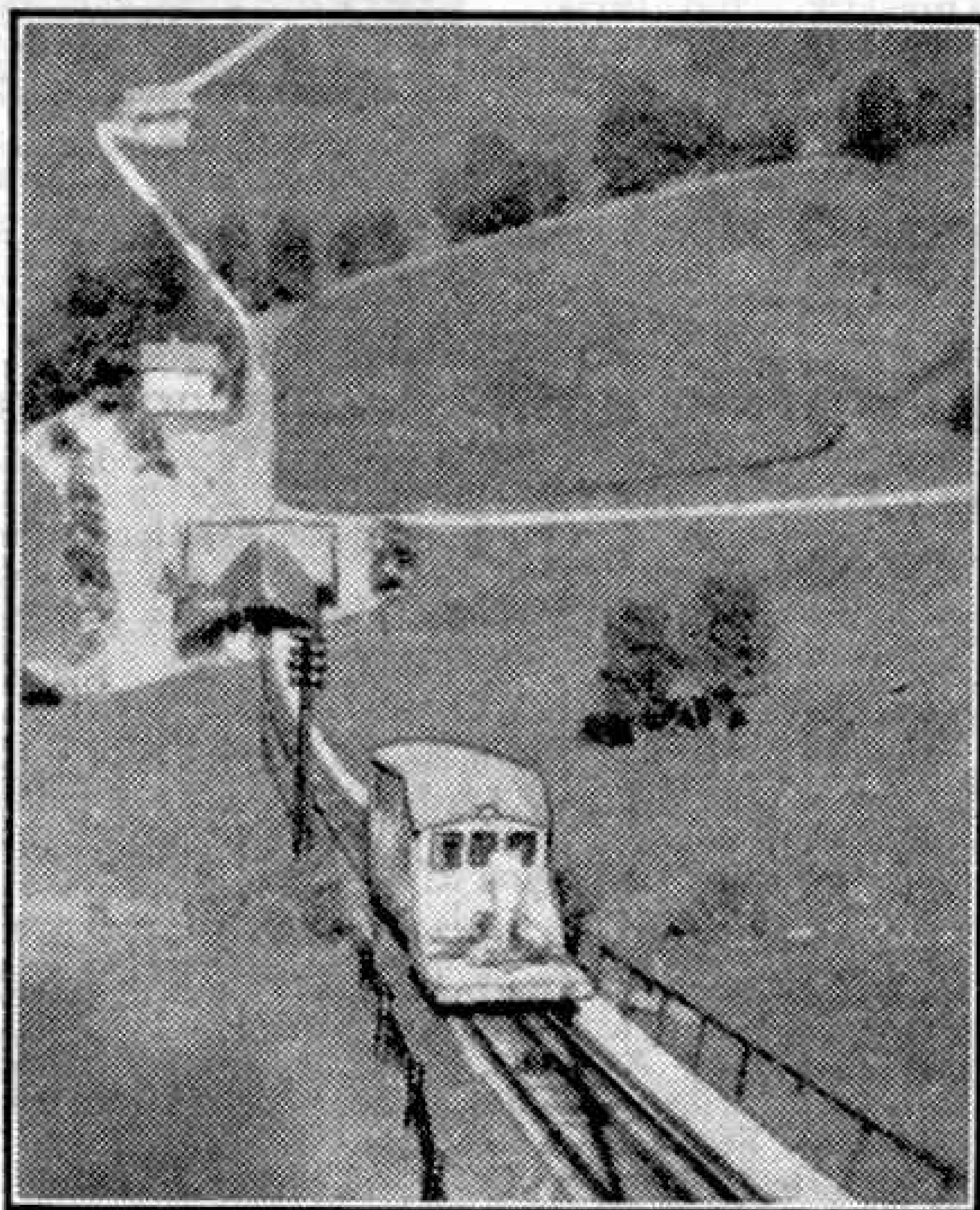
THE ENGELBERG FUNICULAR RAILWAY

In the "M.M." for February last there was an illustration of the aerial ropeway on the route of the Engelberg-Jochpass line in the Swiss Oberland. I am able to contribute a photograph of the funicular

railway climbing the steep slope from Engelberg to Gerschnialp by which the aerial railway is reached. This railway is worked on the normal principle of "one up" and "one down" on this type of railway, with a passing place about the middle. It passes over a sunken road on its way up, and enters the station through a tunnel about 75 yds. long. The cars are painted yellow, with a white light each end, and in front is a curious contraption built to carry skis, sleds, etc., in winter, and heavy haversacks and bicycles in the summer.

I travelled on the aerial railway, and was interested to find that the guard climbed up to the platform near the tractor mechanism and stayed there the whole journey. He must have had a good head for heights. The trip from Gerschnialp to Trübsee takes 15 min., but the road journey on foot between the two places requires 1½ hrs. Hydraulic rams are used as buffers, but I did not see these in action.

M. J. GARWOOD (London S.W.19).



The funicular railway from Engelberg to Gerschnialp in the Swiss Oberland. Photograph by M. J. Garwood, London S.W.19.

A "Short" Story—(Continued from page 258)

In addition, B.O.A.C. have 12 "Plymouth" class boats, which are almost identical with the S-25V "Sandringhams" in service with airlines in Australia, Norway and the Argentine. Basically similar to the "Hythes," these aircraft were re-designed by Short Brothers as passenger aircraft, with a nicely streamlined nose and tail instead of the latter's faired-over gun positions. The "Plymouths" are flying regular services from Britain to Twakun (Japan) and Hong Kong, as well as local services such as those linking Hong Kong, Bangkok and Singapore.

The availability of these new flying boats enabled B.O.A.C. to retire the last of their "Empire" boats last year. Typical of the fine service put in by them is the story of "Coriolanus," which flew regularly to South Africa and Australia until 1940, after which she was based at Durban to operate on the vital "Horseshoe" route, linking South Africa, Egypt and India.

Of the eight boats transferred to Qantas Airways after the Japanese invasion of Java and Malaya only "Coriolanus" survived the war. She helped in the evacuation of Singapore and the East Indies, carried more than 10,000 urgently-needed troops into the New Guinea war zone and evacuated sick and wounded. At the end of the war she was the first aircraft into Singapore, and returned with a load of liberated Australian prisoners-of-war. Then for two years she regularly flew the arduous Sydney-Noumea run, before being retired last December with a record of 2,523,641 miles of flying in nearly 20,000 accident-free hours.

That is as far as our Short Story has gone at the moment, although a glimpse of the future has been given by the giant 58-ton S-35 "Shetland," capable of carrying up to 60 passengers. Only one "Shetland" will be built, but it would be a tragedy for British civil aviation if no more types of Short flying boats were to follow her to carry on the fine traditions established by the "Empire" boats.

Shorts have recently completed the prototype of a small 5-7 seat amphibian, the "Sealand," which promises to be an extremely useful and popular aircraft for feeder-line work, but our airlines need new, larger British air liners to restore our lost prestige on the world's airways. This country leads the world in the design of flying boats and jet engines, and there is no reason why British flying boat manufacturers, given adequate Government support, should not once again provide British airlines with the world's safest, most comfortable air liners.

Canada's Forest Giants—(Continued from page 261)

of logging. Occasionally one or two logs may get jammed across the stream at a bend or in a shallow stretch, and other logs pile up swiftly behind them to create a huge jam. The men are always on the alert to prevent this, but it may happen by ill luck in spite of every care. In the past the lumberjack then had to scramble out on the logs and push and pull here and there in order to release the jam. The instant the key logs that caused the jam were freed the whole mass surged forward, and at times only the greatest activity saved the lumberman caught out on the logs when this happened. Safer and more effective methods of freeing a jam are now employed. Instead of risking his life by stabbing at the logs in the hope of setting them free the lumberman plants a few sticks of dynamite in the worst positions, lights the fuse, and makes for the bank.

Sometimes huge rafts are made of the floating logs, which then go many miles downstream, with the lumbermen actually making their homes on them.

A giant raft of this kind requires a crew of from 20 to 30 men, who steer it by means of huge 20 ft. sweeps pivoted at the front and rear ends. This method is not so largely used to-day as it was in pioneer times, when sawmills were fewer in number and the timber was carried over enormous distances.

London Central Line Extension—(Cont. from p. 266)

"rush-hour specials" to deal with the morning and evening peak loads. At the same time the "peak" service was increased from 30 to 32 trains per hour. Additional coaching stock was brought into use for this purpose, and 15 more trains were added to those already in service.



A giant cedar, over 12 ft. in diameter, in the Chilliwack Valley, British Columbia. (See special article on page 261). Photograph by courtesy of the National Film Board, Canada.

The new lines are particularly useful to the 120,000 Londoners who live in the areas served, for not only have they a rush-hour service of a train every 3½ to 4 minutes on each line, but Newbury Park is now only 25 minutes in journey time from Liverpool Street, and 36 minutes from Oxford Circus, and the trip from Woodford to Oxford Circus only takes 33 minutes.

Work is being pushed ahead with further sections, and soon London Transport trains will serve Loughton and stations beyond. Three more stations on the old Grange Hill Loop Line, Barkingside, Fairlop and Hainault, were opened on 31st May, a step which brings Hainault within 33 minutes travelling time of the Bank. When all sections are opened, and the electrification of the line from Liverpool Street to Shenfield is completed, this part of London, for a long time one of the most unsatisfactory from a travel standpoint, will become one of the best served areas, with railway facilities equal to those of any other part of the Metropolis.

Stamp Collecting—(Continued from page 281)

was extended still further in 1932, when the Games again were held in the United States, for there were two issues. One of these covered the winter games, held on Lake Placid, and the subject of the design was ski-ing; the summer games issue comprised two stamps, one of which shows the almost inevitable discus thrower, as usual with the discus at the top of the back swing; in the next set, from Germany in 1936, he was replaced by the javelin thrower. At the moment of writing the designs of the forthcoming British stamps have not been revealed and it will be interesting to see if the discus thrower re-appears.

Fireside Fun

Visitor at apiary: "One of your bees stung me, and I want you to do something about it."

Beekeeper: "Certainly, madam. Just show me which bee it was, and he'll be punished."



"Is he safe, sir?"

"He's much safer than you are, my boy!"

Mother: "Great heavens, son, look at yourself!"

Son: "I fell into a puddle."

Mother: "What? And with your new trousers on?"

Son: "I didn't have time to take them off."

Bride: "How much do you earn, dear?"

Groom: "About £150 a year."

Bride: "But we can't live on that!"

Groom: "Oh, but I get paid £700."

Visitor: "Is this a good river for fish?"

Native: "Indeed it is. No one can persuade them to leave it."

Sandy: "Give me sixpence to go to the Zoo to see the animals, Daddy."

Daddy: "What a waste of money! Take this magnifying glass and go to look at the worms in the garden."

"Children should be trained carefully in the way they should go. Don't punish after; correct before."

"Yes, mum, but I always correct mine behind."

THIS MONTH'S HOWLER

A centimetre is an insect with a hundred legs.



"Why haven't you creased your trousers?"

"I put them under my mattress, same as the others, but I'm a light sleeper."

BRAIN TEASERS

A STRIKING PROBLEM

The striking mechanism of a clock had gone awry when it had run down and on rewinding it struck 9 at 2.30. At what time would it strike one?

TWO FOR ONE

A firewood seller had none of his usual round bundles 9 in. in diameter left when he reached his last customer, so he offered her two bundles $4\frac{1}{2}$ in. in diameter instead for the same price of 6d. All bundles were of the same length. What should he have charged her?

T.K.C.

AS A FLY CRAWLS

At one corner of a 9 in. cube resting on a table there was a speck of sugar. On the opposite vertical edge, 3 in. below the corner opposite the one where the sugar was placed, there was a fly. The fly knew the sugar was in position—don't ask me how—and immediately crawled to it by the shortest route. What distance did it have to go?

S.W.C.

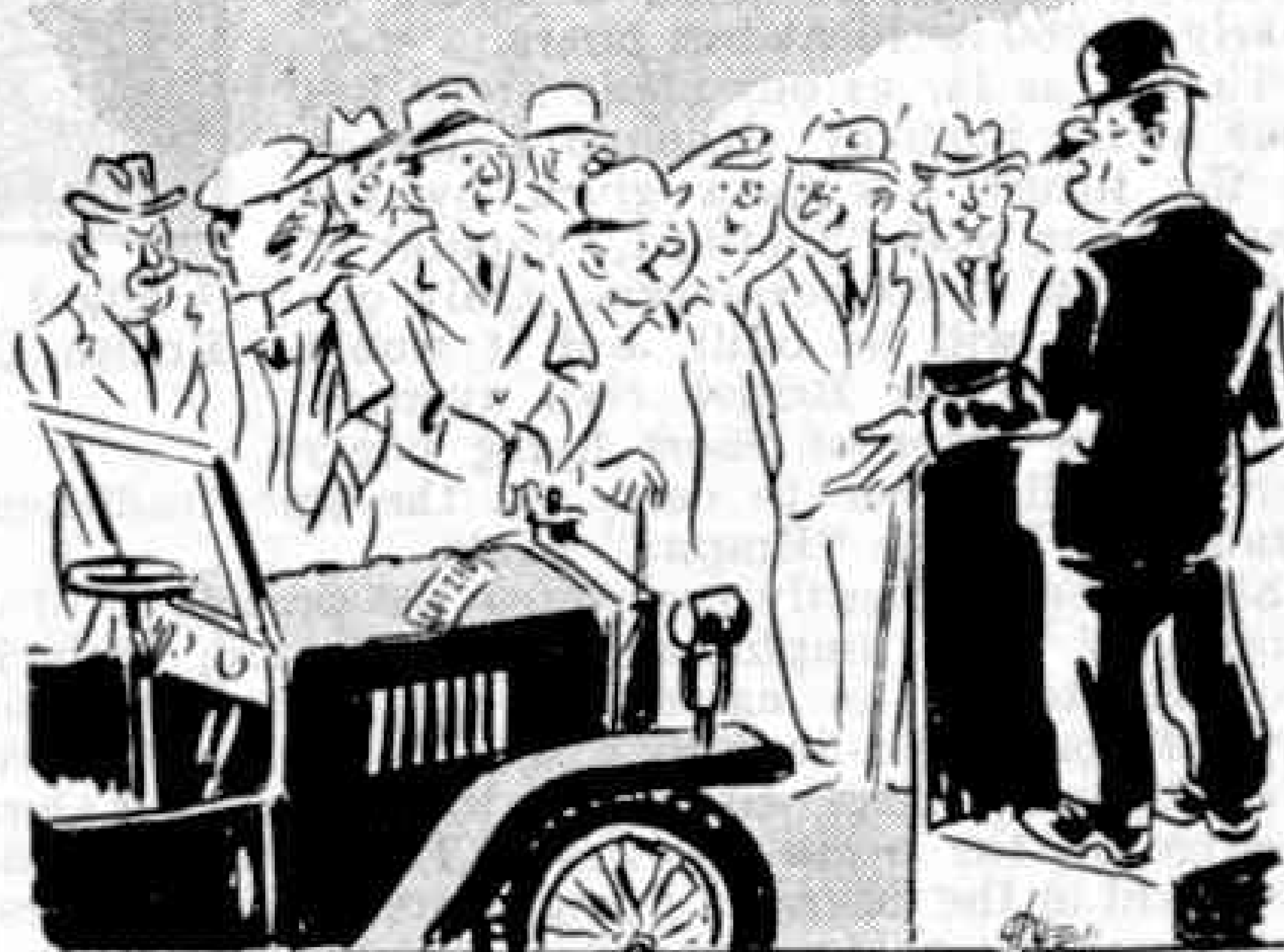
NOT AS OLD AS HE WILL BE

When asked how old he was a man replied that 10 years ago he was half as old as he would be 20 years from now. Can you say how old he is now?

EASY SURELY

Finally, can you make one word out of NEW DOOR?

S.W.C.



"Who'll drive it away for two pounds?"

"Where's the two pounds, mate?"

SOLUTIONS TO LAST MONTH'S PUZZLES

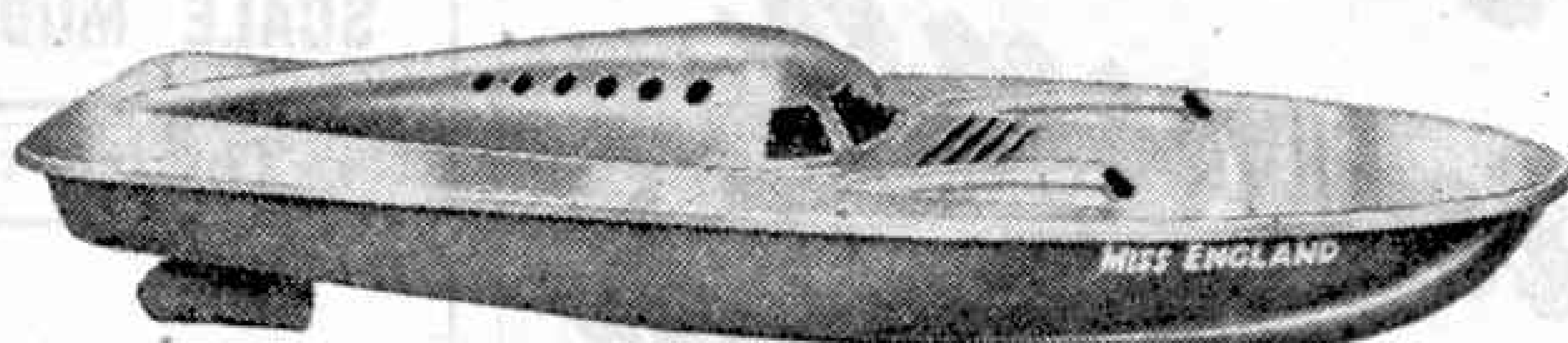
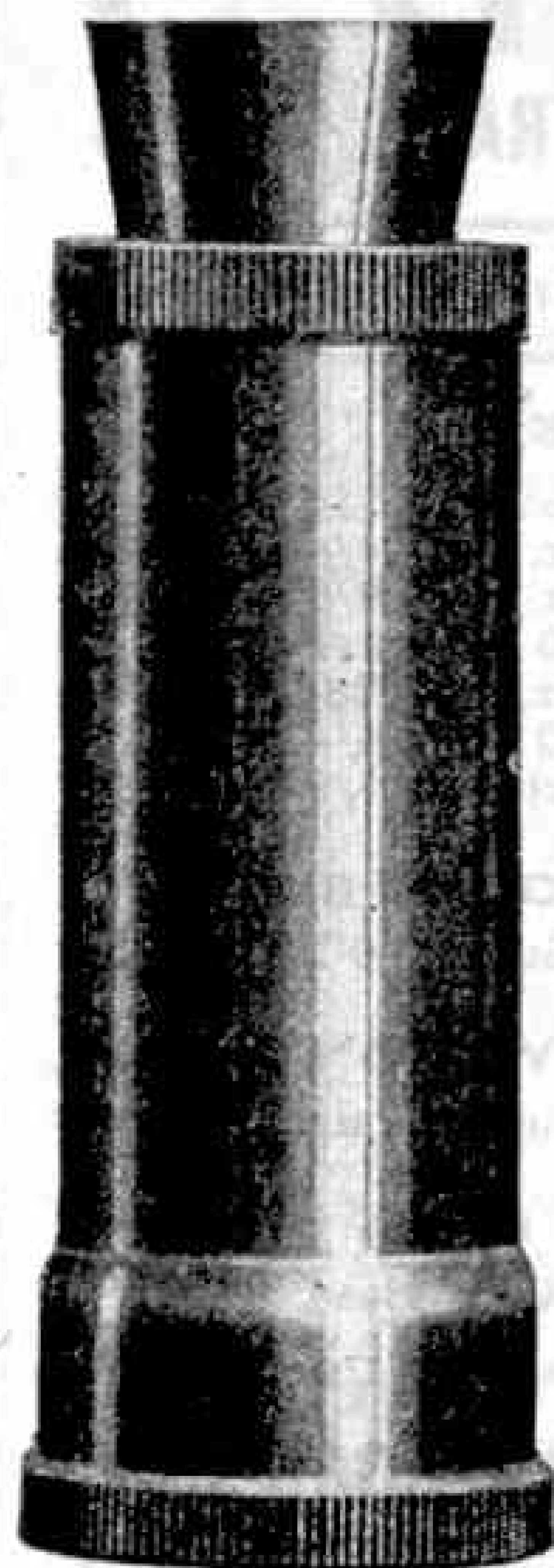
The football teams in our first puzzle last month were ARSENAL, LIVERPOOL, PORTSMOUTH, SOUTHAMPTON and ROTHERHAM.

The highest individual score made in a test match was 364, by L. Hutton at the Oval in 1938. D. Compton made the greatest number of centuries in one season, 17 in 1947. C. B. Fry in England in 1901 and D. Bradman in Australia in 1938-9 made six consecutive centuries. The fastest century in first-class cricket was made by A. Fagg in 1940; his time was 18 min. J. B. Hobbs, 61,221 runs, and W. Rhodes, 4,187 wickets, are the answers to the fifth of our cricket tests.

The two numbers added together in our third problem are 89 and 11, giving a total of 100.

Water can be carried in a sieve when it is frozen. An author is a jeweller when he is a Goldsmith. A spelling bee is more wonderful than a horse that can count. Clouds are like hansom cab drivers because they both hold the rains; vary the spelling as required.

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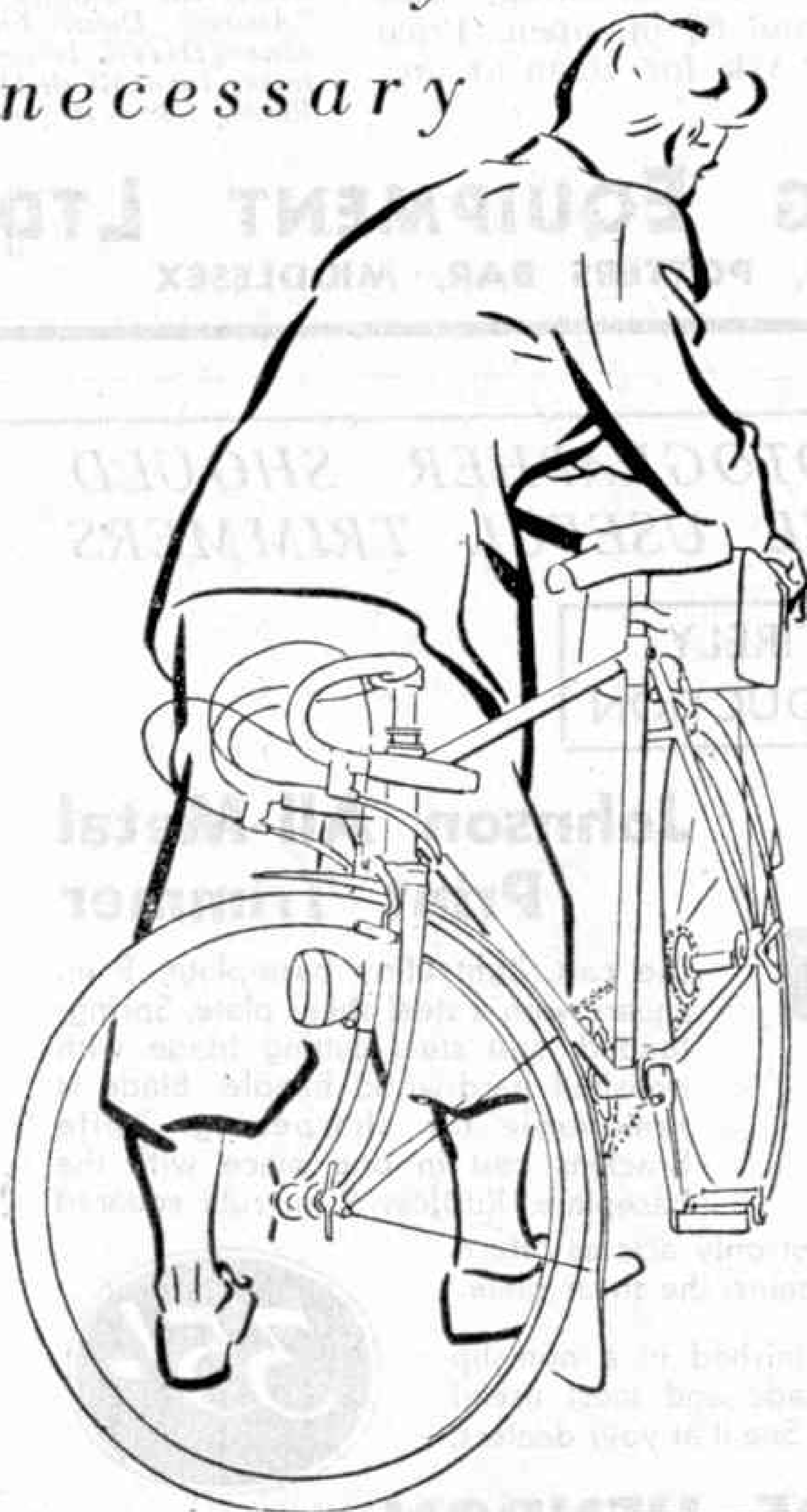


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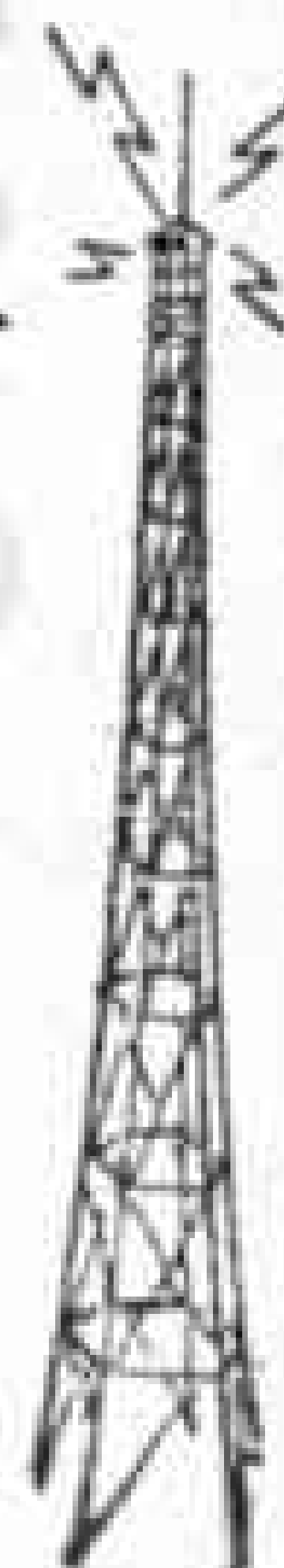
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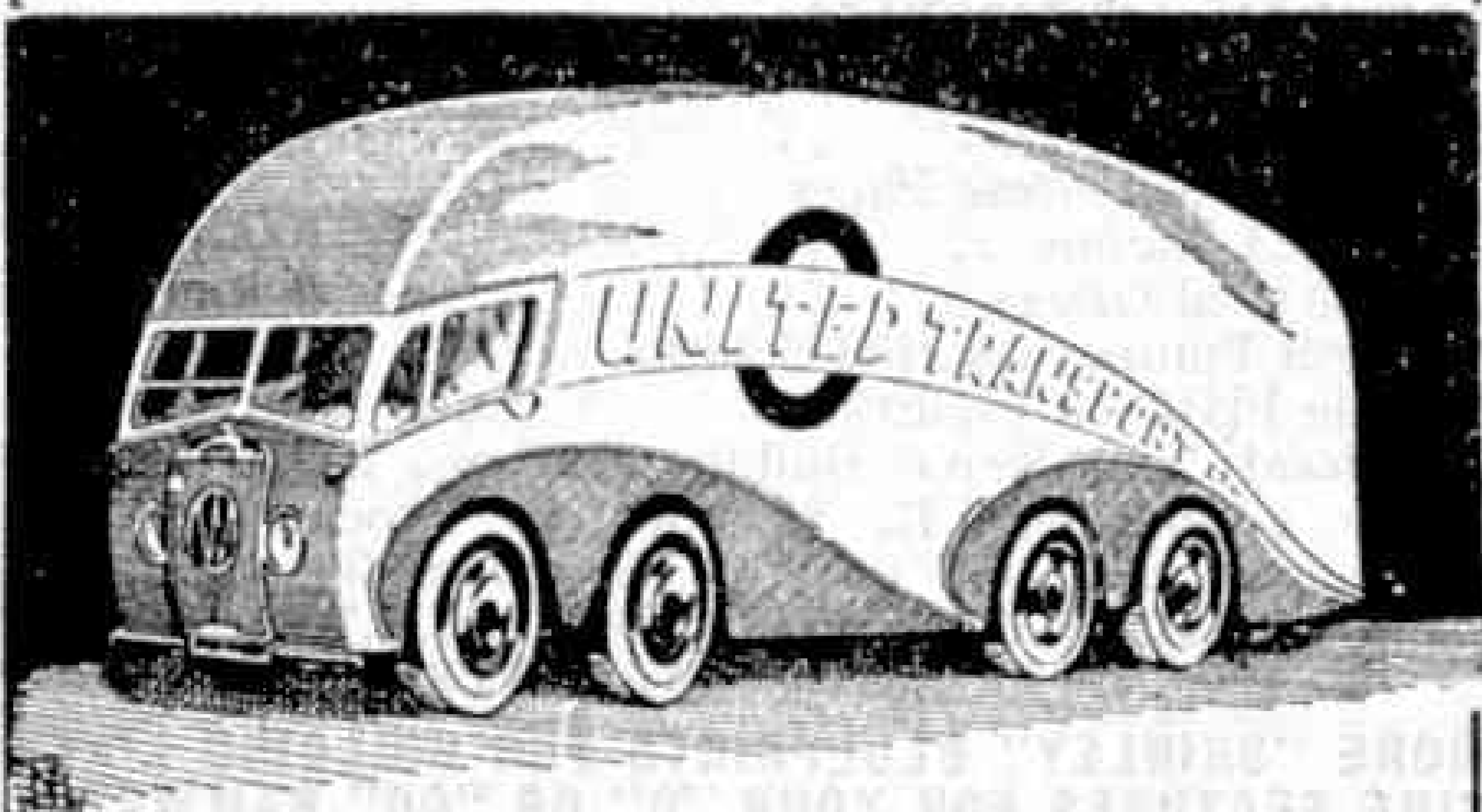
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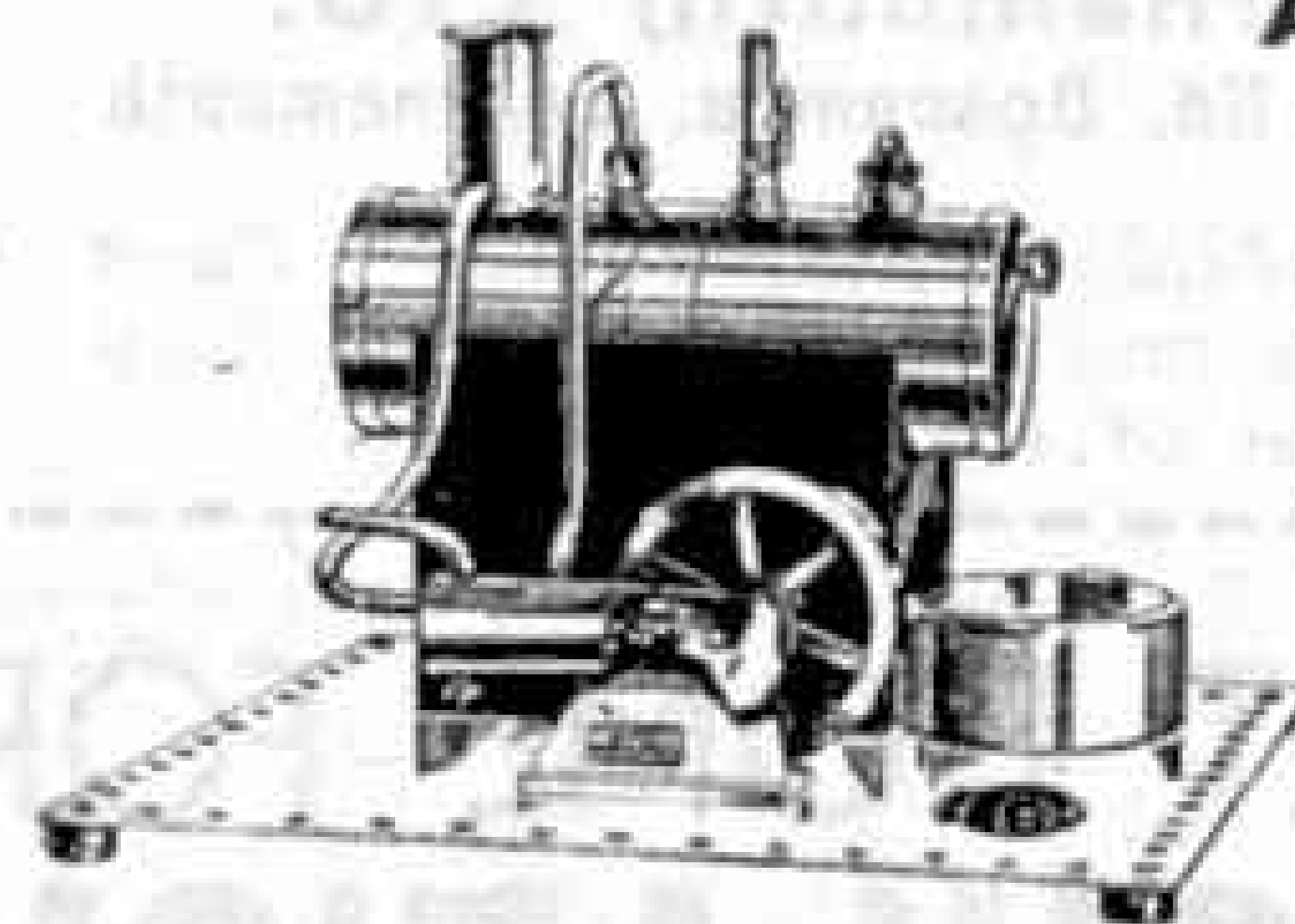
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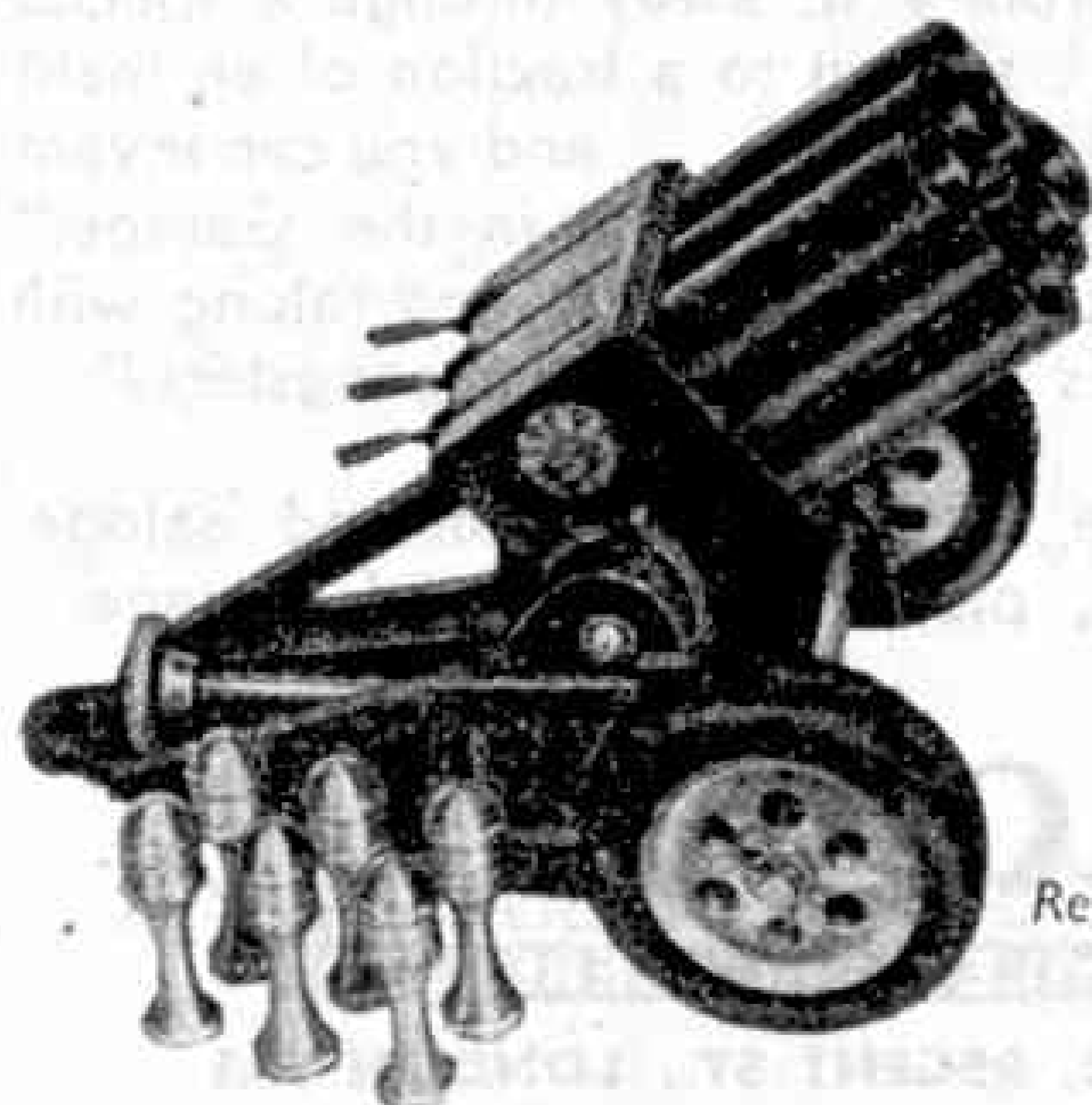
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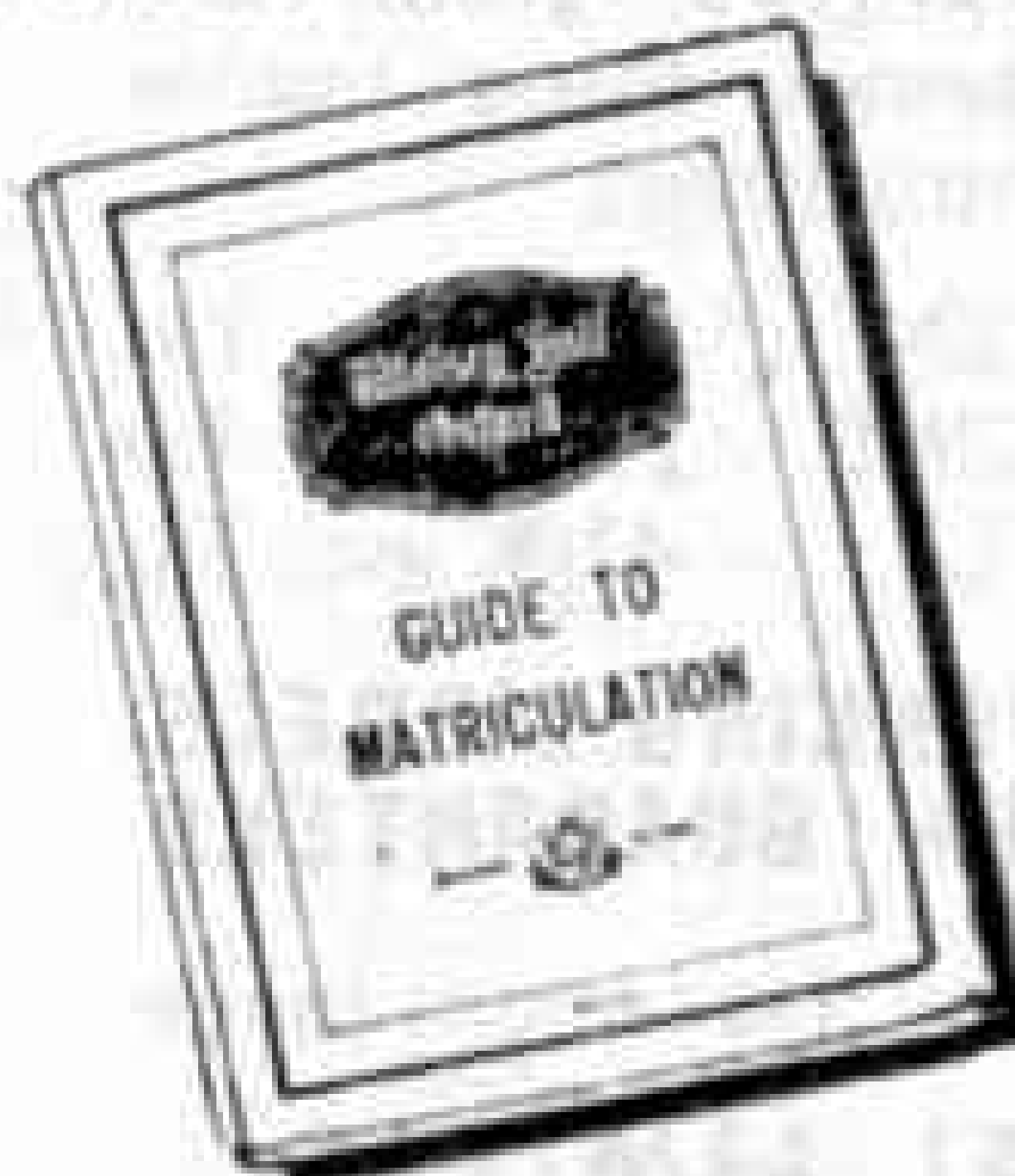
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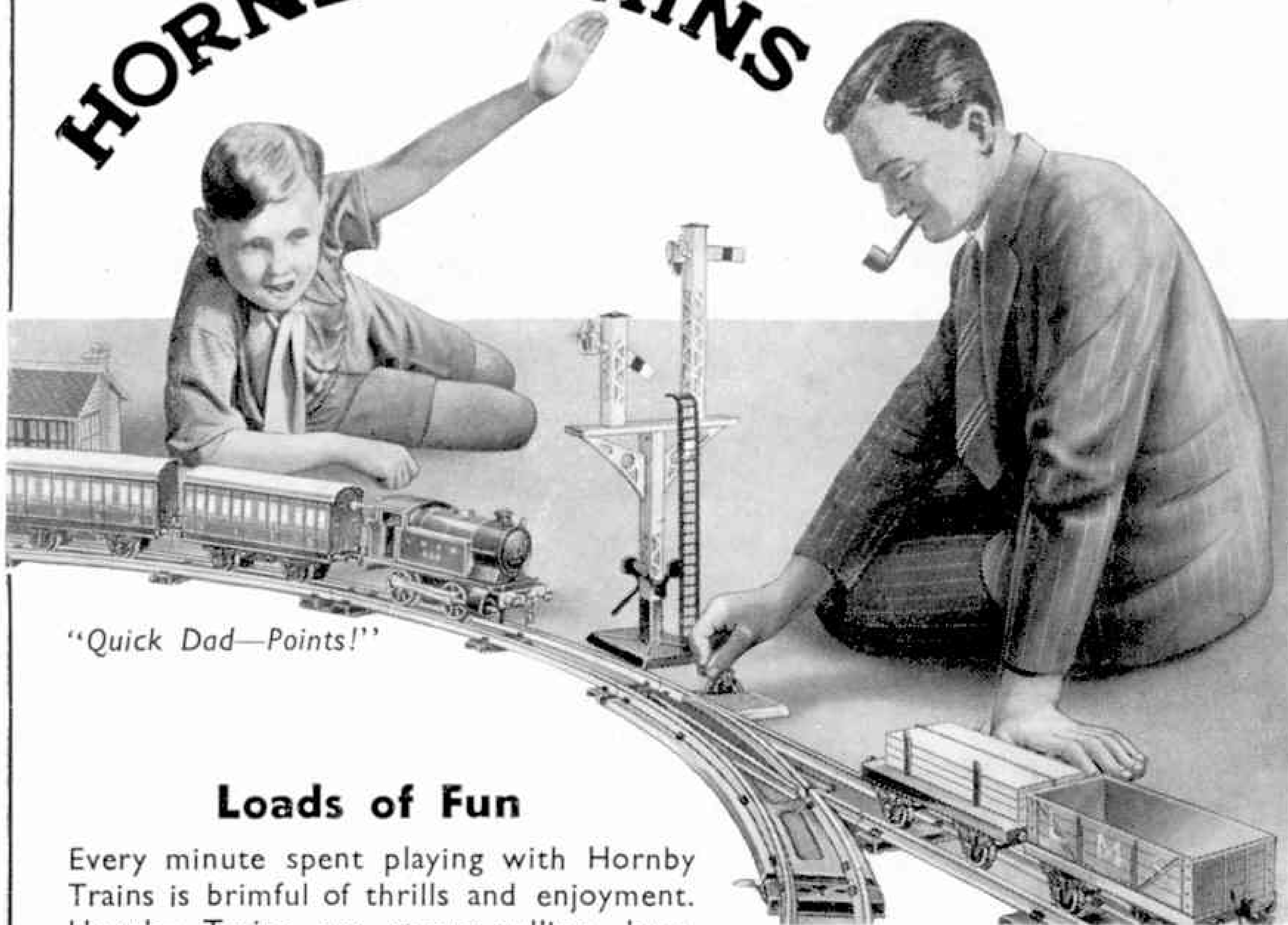
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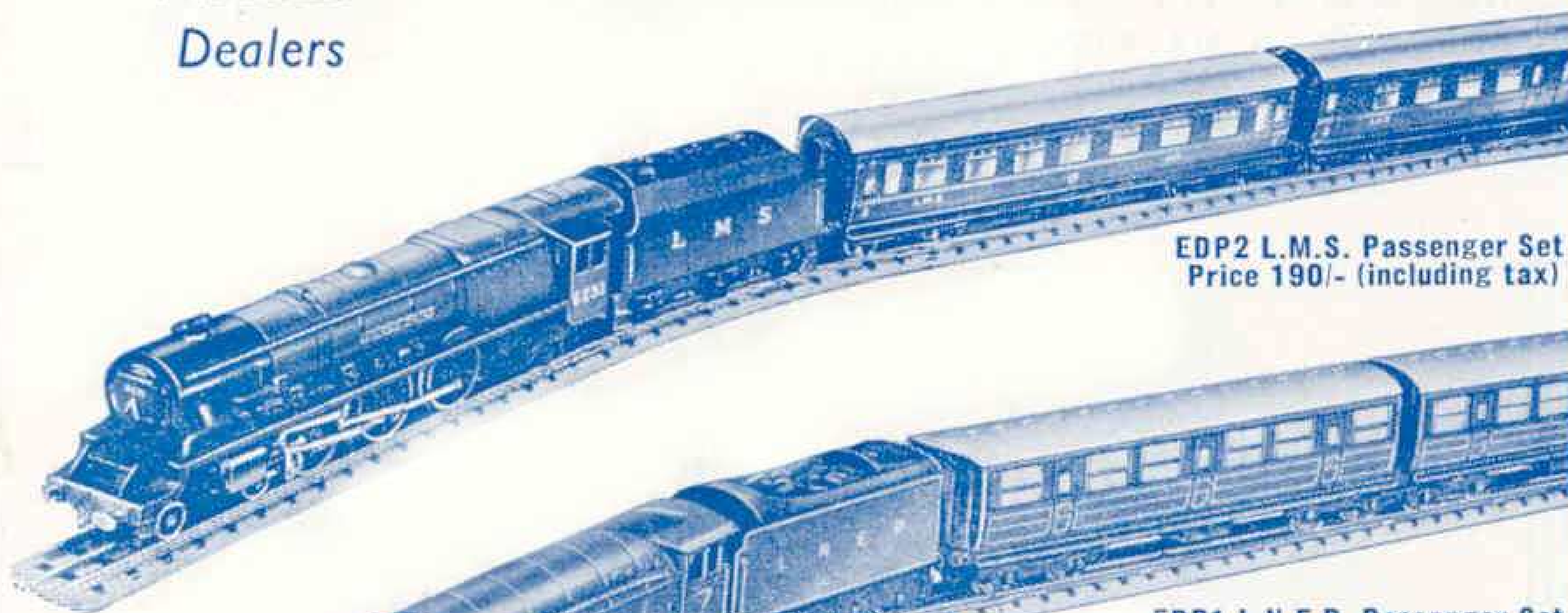
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